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IMPLEMENTATION OF THE ACID RAIN PROVISIONS
OF THE CLEAN AIR ACT AMENDMENTS OF 1990

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RING

BEFORE THE
SUBCOMMITTEE ON
CLEAN AIR AND NUCLEAR REGULATION
OF THE
COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

OCTOBER 21, 1993

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IMPLEMENTATION OF THE ACID RAIN PROVISIONS OF THE CLEAN AIR ACT AMENDMENTS OF 1990

THURSDAY, OCTOBER 21, 1993

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR REGULATION,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m. in room 406, Dirksen Senate Office Building, Hon. Joseph I. Lieberman [chairman of the subcommittee] presiding.

Present: Senators Lieberman, Simpson, and Baucus.

OPENING STATEMENT OF HON. JOSEPH I. LIEBERMAN, U.S. SENATOR FROM THE STATE OF CONNECTICUT

Senator LIEBERMAN. Good morning and welcome to the hearing.

We have an outstanding group of witnesses here today, and I am grateful that they could join us.

Today, as part of the committee's overall oversight work, this subcommittee is going to examine implementation of the acid rain provisions of the Clean Air Act Amendments of 1990.

These provisions are probably the most innovative approach to controlling pollution in the history of environmental protection. I think these are very innovative approaches. Their development broke a log jam of 10 years on this question, and allowed us to go forward with the 1990 amendments. They provide for a guaranteed level of environmental protection, but, at the same time, are designed to reduce costs and allow for maximum flexibility and innovation by the regulated industry.

But putting these provisions into effect is no easy task, and today we're going to hear from various players involved in this effort. The largest initial responsibilities were given to the Environmental Protection Agency.

I must say that in the last two hearings on the Clean Air Act implementation both members of this committee and witnesses who have testified before the committee have given the EPA literally low grades for its implementation efforts.

But today, I'm going to give the EPA an A for its work on the acid rain provisions—not quite perfection, but an A nonetheless. While the process has not been without difficulties, and there is dispute about one of the major roles, the program is on track, and I think the EPA has tried to be remarkably responsive to all sectors

in the implementation process. In fact, the EPA went to great lengths to involve the public in its rule making.

Today, we're going to hear testimony to that from those within the regulated industry. We're going to hear also other good news from our witnesses. More reductions in sulphur dioxide emissions are actually being achieved in an earlier time frame than anticipated, and that's, again, an unusual statement to be able to make. We're ahead of the goals that were set.

The costs of the program are less than anticipated at the time of enactment and significantly less than under a command and control program. This in fact may be the first time in the history of this committee that industry witnesses will actually discuss how a new congressional mandate is decreasing the cost of pollution control.

The key objective of title IV of the Clean Air Act Amendments is to reduce by January 1st of 2000 annual sulphur dioxide emissions by 10 million tons from the 1990 levels. Reductions are to occur through a two-phase process with a cap imposed in the second phase.

The mechanism for allocating these reductions is a comprehensive permit and emission allowance system. Allowances may be used to meet emission requirements or traded or banked for future use or sale. Utilities are given great flexibility in deciding how to achieve the requirements of the Act. They can, for instance, use sulphur coal as scrubbers, for which to low sulphur coal or natural gas or renewables, or they can purchase emission allowances from someone to make up the difference.

A number of our witnesses will review how the market system for allowances is developing, and I do want to stress that while this system is important, the success of the pollution reduction goal—which is reducing sulphur dioxide emissions by 10 million tons—is not dependent on the success of the market that has been created or is being created. Under the Act, the emission limitations must be met whether or not the trading system functions as intended.

The second issue that we'll examine today is the impact of various State laws and regulatory decisions on the functioning of the program. Illinois, for example, recently passed a law mandating that the States' largest utilities use scrubbers. We will hear about Illinois' reasons for this law.

Our friends from Wyoming, and Montana, and others are concerned about the constitutionality of this law, and the restrictions it may place on the use of low sulphur western coal in the effort to reduce acid rain.

We're going to discuss how rulings of State public utility commissions, which must approve decisions by utilities on whether to buy allowances use scrubbers or switch fuels may affect implementation of the title, were these State actions expected at the time of enactment, how will they affect the overall national cost of the program.

And, finally, we're going to consider the lessons that we in Congress can learn from this program for future environmental actions. Traditional command and control regulations generally specify a technology or rate of emissions which translates into use of a specified technology.

Title IV, on the other hand, sets firm requirements for emissions reductions expressed in terms of emissions tonnage limitations with a cap on individual plant and total emissions, but gives the plants flexibility about how to comply.

At the time of enactment, Congress anticipated that this flexibility, along with the trading system, would allow overall national program cost to be minimized. Congress also wanted to show that this approach could encourage energy conservation, pollution and prevention, and innovation in technology since low cost reducers are directly rewarded.

I am pleased to note that it seems that we're making progress so far toward each of these goals.

Our witnesses will also point out another key element of title IV. For the most part, implementation does not stop if EPA delays rule-making. Liability for meeting emission limitations arose with enactment of the legislation. The EPA is also not involved in approving specific compliance decisions. Given the large number of deadlines the EPA has missed throughout the rest of the program, I think we ought to give special attention to this particular feature of title IV.

Overall, as I indicated at the beginning, I think we have a lot to be encouraged about in the progress of implementation of title IV. Perhaps the best testament to its success comes from one of our witnesses from the regulated community, Richard Abdoo, who is the CEO of Wisconsin Electric Power Company, who will state in his testimony, and I quote, "This approach has harnessed the combined creativity of engineers, scientists, and business staff of utilities and regulators alike in a way never envisioned," end quote.

That's good news, hopeful news, and we look forward to hearing about it in detail this morning.

I will now yield to the Chairman of the full committee, Senator Baucus.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. Thank you very much, Mr. Chairman, and it's a pleasure to be here this morning. I am very happy that you, as subcommittee chairman, are holding these hearings. They're very important, and I commend you for the work that you are doing.

Also, I am pleased to see the Senator from Wyoming here. Senator Simpson and I—to use his phrase—labored long and hard in the vineyards over the creation of this title as well as the entire Act. I cannot think of any matter that I've been so closely engaged in with the Senator from Wyoming as the Clean Air Act spending many late nights and many, many days. I'm hard-pressed to think of anybody who has worked harder to find a constructive solution to clean air problems that we have generally and acid rain, a little more in particular, than the Senator from Wyoming, and I'm very happy that he's here.

Mr. Chairman, oversight of this law and review of its innovations is obviously critical, in particular if we're going to make this work.

In the big picture, I view title IV of the Clean Air Act Amendments as an historic accomplishment in environmental law. As

policy, it is an innovative approach to a complicated environmental and economic problem, and it also shows that all who are concerned with the environment can work together.

In writing title IV, Congress worked closely with both the industry and with environmentalists to use market principles to solve one of the worst air pollution problems of our time—acid rain. Acid rain has devastating effects on our natural resources and on the health of our citizens. In 1988, the EPA found that acid rain was the main reason for over 2,500 miles of streams in this part of the country alone were astatic. Moreover, the sulphur dioxide and other pollutants that make up acid rain impair breathing, cause respiratory disease, and contribute to the premature deaths of thousands of Americans.

For nearly 10 years, Congress fought over this issue weighing of the economic consequences of strict regulations against the health environmental consequences of letting the acid rain problems fester. We met almost irreconcilable regional and philosophical differences. We only squared the circle when we found a new approach.

In the Clean Air Act Amendments of 1990, we've recognized that a market-based approach to acid rain was both more effective in reducing pollution and more efficient for the economy than the traditional command and control approach. So we set a cap for the level of emissions of sulphur dioxide, distributed allowances to utilities to meet the cap, and let the market do the rest.

Like all new ideas, title IV has encountered new problems. The interference of State laws designed to impede the cost of low-cost, low-sulphur coal is particularly distressing—and I might add, most particular distressing to those of us in the West who worked long and hard to fashion a compromise in writing title IV.

I am also concerned that the EPA has not come up with an allowance tracking system, and, finally, the fact that the EPA has to change the rules on substitution plans in the middle of implementation is also problematic.

But these are growing pains. They're the result of trying a new approach. They should not overshadow the overall success and the great future potential of the allowance trading program. We should view them as chances to learn and make new environmental laws even better.

That is the goal of this hearing, and that is why I am so pleased that Chairman Lieberman is conducting this hearing.

I might say, Mr. Chairman, in a few minutes I hope you will excuse me. The Finance Committee is marking up NAFTA, and I should be there at that time.

Senator LIEBERMAN. Thank you, Senator Baucus.
Senator Simpson.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Mr. Chairman, I thank you, and I am very pleased you are holding this hearing. You are always receptive. It's a pleasure and an honor to serve as the ranking member of this

subcommittee, and I've been involved in it since I came to the Senate both as chairman and ranking member.

You are always very cooperative and accessible and eminently fair, and I appreciate that very much.

Senator LIEBERMAN. This praise from you will get me in trouble around here, but I personally appreciate it.

Senator SIMPSON. Well, I was going to go on, but I'll just cut it off.

[Laughter.]

Senator SIMPSON. Senator Max Baucus, our Chairman of the full committee has been on a remarkable journey. He has related some of it, but he has certainly been a loyal ally and a splendid force in achieving the Clean Air Act and a real warrior. As we wound it up at 5:30 one morning to the sound of crashing knuckles and skulls, it was quite a delight.

Senator LIEBERMAN. Which is not an overstatement either.

Senator SIMPSON. It certainly isn't.

[Laughter.]

Senator SIMPSON. I think when John Dingell hit the gavel, he couldn't tell whether he hit flesh or wood, but it was interesting.

[Laughter.]

Senator SIMPSON. We're here to look at the issue of protectionism. It took us 10 years to break the deadlock and get a Clean Air Act, and the bonus allowance pool for high sulphur coal and job assistance programs for workers was done. We met the needs and the requests of the high sulphur coal States. We did a balancing act that was extraordinary, and we've reached this creative market-based approach for reducing SO₂. And then we find that certain mid-Western States passed laws subsequent to the passage of these amendments which threaten the success and intent of the market-based program you've described.

And the laws in those States knew the objectives which were overruled in the Clean Air Act, and this activity of protection of limited parochial interest by discrimination is not what we had in mind, and it's an inappropriate interference with the planned strategies. It encroaches on the market-based approach and is a serious threat to the allowance trading system, and I think it will have a rippling effect on other industries. Rate payers are going to pay hundreds of millions in additional cost to comply with that—not to mention the impact on shareholders of publicly owned utilities and the economies of Western States will be greatly affected.

There has been a similar protection of statutes struck down by the U.S. Supreme Court earlier this year in the case of Oklahoma versus Wyoming, in which we'll have the opportunity to hear testimony from the plaintiff's very able counsel.

I welcome Mary Guthrie who is the Assistant Attorney General of Wyoming to the committee. She has worked in the Attorney General's Office for 15 years, has a remarkable wealth of experience in environmental and natural resource law, and, besides that, I've known her since we were kids together. Her parents and mine were great and dear friends. Her father served as a Wyoming district court judge when my father was Governor. And she argued that case very successfully. I'm very proud of her because it struck down that protectionist legislation.

So these are some of the things that we will deal with, how to make it work, how to help it work, how to meet the legislative intent. And, I can tell you, as long as Max Baucus and I are here in the Senate, we can always describe legislative intent on this one, and I think that's very important to know because usually that's a very vague concept—at least it always was when I studied. So how to keep the creative approach, how to keep allowance trading—I'm curious to see how the EPA will handle this. I know they have to generally support the States' activity that are suing for the issue of coal market protection activities.

And I think Carol Browner is doing a good job. She's accessible, she listens, I think that we will know where she stands. And I'm curious to here what will occur with allowance trading with curious market forces that drive, the money that was involved in the last trading.

So I look forward to hearing the testimony, and if we're ever going to make progress in the environmental area, it's critically important that the acid rain allowance system should succeed, and I hope to have some good discussions on that. And I thank my friend, the subcommittee Chairman, Joe Lieberman, for holding this hearing. And I thank you, Mr. Chairman—both Chairmen.

Senator LIEBERMAN. Thank you, Senator Simpson. Thanks for your kind words, and, of course, as always, it's a pleasure to work with you—it really is.

I would like to call the members of the first panel to the table.

Michael Shapiro, Acting Assistant Administrator, Office of Air and Radiation at the EPA; The Honorable David Phelps, State Representative from Illinois; Ms. Mary Guthrie, Senior Assistant Attorney General from Wyoming; and Richard Abdoo, Chairman of the Board and CEO of Wisconsin Electric Power Company.

We thank you all for being here. We look forward to your testimony. Any prepared statements that you've either submitted to us earlier or have today will be included as part of the record. We ask you to try to abbreviate your opening statements here. Generally, we run this clock at a 5 minute interval. In some exercise of legislative deference to the executive branch, we tend to give the EPA a little bit longer at the opening. So let's try to stick as much as we can to that schedule.

Mr. Shapiro, welcome, and we look forward to your testimony.

STATEMENT OF MICHAEL SHAPIRO, ACTING ASSISTANT ADMINISTRATOR, OFFICE OF AIR AND RADIATION, ENVIRONMENTAL PROTECTION AGENCY

Mr. SHAPIRO. Thank you very much. Good morning, Mr. Chairman, and members of the committee.

I am pleased to be here today to discuss the Environmental Protection Agency's efforts to implement the acid rain provisions of title IV of the Clean Air Act Amendments of 1990.

Acid deposition, or acid rain, as it is commonly known, occurs when sulfur dioxide and nitrogen oxides react with water vapor and oxidants in the atmosphere and then fall to earth as rain or snow, or as dry particles. The dominant precursor of acid rain in the United States is sulfur dioxide from coal-burning powerplants.

Emissions of nitrogen oxides primarily from powerplants and motor vehicles also contribute to acid rain.

Over 20 million tons of each of these two pollutants are currently emitted into the atmosphere, damaging surface waters and trees and accelerating the decay of buildings and monuments. In addition, recent research indicates that sulfur emissions from powerplants contribute significantly to the formation of particulate matter, a major human health risk. Also, sulfur emissions from acid sulfate aerosols contribute significantly to visibility impairment.

Title IV of the Clean Air Act Amendments established a two-phase program to reduce sulfur dioxide emissions from powerplants. The Act also calls for a two million ton reduction of nitrogen oxide emissions.

Since passage of this statute, the EPA has worked hard to implement these provisions. Overall, we believe that the program is off to a good start, although significant challenges remain.

I would now like to focus on four principles borne out of the acid rain program that the agency sees as pivotal to the success of this unique environmental strategy:

First, the use of market mechanisms;

Second, encouraging pollution prevention and innovative technologies;

Third, an open participatory regulatory process; and

Finally, strict accountability for environmental results.

First, by employing market mechanisms to reduce emissions, title IV creates a unique opportunity to protect the environment at the lowest possible cost. The approach taken by title IV represents a departure from traditional command and control regulatory methods that establish specific, inflexible emission limitations with which all affected sources must comply.

Instead, for sulfur dioxide the acid rain program uses an allowance trading system that harnesses the incentives of the free market to reduce pollution. At the time the amendments were passed, we estimated that the market approach would cut compliance costs for utilities and rate payers by at least 20 percent over traditional command and control approaches.

I am pleased to report to the subcommittee that new analyses completed last year showed that trading would reduce the cost by 30 to 50 percent over a scenario with no trading.

Second, and as a result of the market-based approach, the acid rain program encourages energy efficiency—a key pollution prevention strategy—and it also promotes the use of new and improved technologies.

For example, the conservation and renewable energy reserve provision of title IV has attracted considerable attention to using pollution prevention to reduce emissions.

The EPA will award the first incentive bonus allowances next month, and several States have been inspired by this provision to review or change their planning and rate-making policies to encourage energy efficiency.

Additionally, most of the scrubbers being built in Phase I at existing plants have sulfur removal greater than the 90 percent required by the Agency's New Source Performance Standards. In

fact, the vendor of one plant is guaranteeing 98 percent sulfur removal efficiency.

Additionally, at other facilities where it was previously not thought possible, utilities are finding ways to burn very low sulfur coal or to burn mixtures of coal and natural gas.

Third, we have found that this type of innovative regulatory approach works best when developed with maximum input and extensive efforts to achieve consensus from relevant parties. To help implement title IV, the EPA created the Acid Rain Advisory Committee, or ARAC, that consisted of 44 representatives from all of the affected constituencies involved in the acid rain program. We have consulted with these advisors to find the best ways to meet our goals in implementing title IV.

The ARAC process was a tremendous success, and enabled the EPA to promulgate rules governing virtually all major parts of the acid rain allowance program within the period of time necessary to get this program in place. The program continues to move forward as a result of the consensus built through that ARAC process.

But the bottom line with any environmental program is environmental results. Under title IV, we will ensure that every ton is measured by every source, every hour of every year. This unprecedented accountability will instill needed confidence in the allowance market and ensure achievement of the Act's initial reduction goals.

As we speak, plants across the country are installing continuous emission monitoring systems to achieve these goals.

Despite these accomplishments, it will be a long time before the acid rain program is fully implemented and we can comprehensively judge the market approach. Phase I begins in a little over a year, and even in Phase I, only a fraction of the utility plants in the country will be in the market. It will not be until Phase II that all utility plants will be in the system.

The EPA will continue to work with its partners in the environmental community, the public sector, and industry to assure that the potential benefits of the allowance system are understood and to further encourage the development of a strong allowance market.

In addition, the EPA faces a number of challenges in the coming months. We intend shortly to propose regulations that correct one significant problem that has arisen in our implementation of the rule. We now believe that certain provisions governing how Phase II units can participate in Phase I can lead to the generation of excess allowances, compromising the emission reduction goals under Phase I and the credibility of the allowance system.

Additionally, the Agency is working hard to complete the computerized Allowance Tracking System, which is needed to efficiently record allowance transfers.

Mr. Chairman, I would like to conclude this testimony by pointing out that the acid rain program incorporates all of the features that the EPA finds are prerequisites to successful market-based programs—clear goals, flexibility, accountability, and enforceability. And it provides a model for future market approaches to protecting the environment.

This concludes my prepared testimony. I would be happy to receive any questions that you may have.

Thank you.

Senator LIEBERMAN. Thank you very much, Mr. Shapiro.

I must apologize and say that I have to go to another committee where a bill that I've introduced is being heard, and ask and appreciate very much, since Senator Simpson is ranking member, to preside for a while until I return.

Representative Phelps is next.

STATEMENT OF HON. DAVID D. PHELPS, REPRESENTATIVE, ILLINOIS STATE LEGISLATURE

Mr. PHELPS. Thank you, Mr. Chairman, and members of the subcommittee.

I consider it a privilege to come before you this opportunity to share with you what we think in Illinois about acid rain.

I am David Phelps. I am the State Representative of the 118th District in Illinois which covers the southern most 10 counties of the State and lies in the heart of coal country. I want to briefly share with you our legislative efforts in Illinois in response to the passage of the 1990 Clean Air Act Amendments. The Clean Air Act Amendments of 1990 have proven to be devastating to Illinois's second largest industry—coal.

I sponsored legislation in 1991 during the 87th General Assembly known as the Coal Bill, which was signed into law by Governor Edgar, which is now Public Act 87-173. I have provided this subcommittee with a copy of the Public Act, as well as an analysis of its provisions and more detail in my testimony which I will try to abbreviate with these comment.

In short, the legislation mandates that flue gas desulfurization units or scrubbers be installed—two each—at Illinois Power's Baldwin Plant near St. Louis and Commonwealth Edison's Kincaid Plant in Central Illinois order to comply with Phase I sulfur emission standards. Another important part of this Act was a commitment of a \$35 million State grant to be used for constructing the Illinois Power Baldwin Plant scrubber.

This was especially significant for Illinois Power's Baldwin Plant since they were being considered for a United States Department of Energy Clean Coal Technology Demonstration Project state-of-the-art super scrubber grant. It was believed that the State grant would given Illinois Power an advantage and possibly leverage the Federal funds.

Because there was no specific language in the legislation that established a deadline for Phase I scrubber installation, and because Illinois Power was not awarded the Federal Demonstration Project, both Illinois Power and Commonwealth Edison had to delay the construction of any pollution control devices.

In addition, the Illinois Power rejected the \$35 million State grant and announced their intention of meeting Phase I compliance standards by utilizing low-sulfur coal, allowance purchases, and natural gas—even after spending \$25 million toward construction of the Baldwin Plant scrubber.

I can assure you that a consensus was reached in negotiations during the 1991 legislative process, and that the legislative intent was clear that scrubbers would be constructed by both utility companies to meet Phase I requirements. A lawsuit is pending on this issue, and I have provided this subcommittee with supplemental documents that will perhaps reflect why these utility companies abandoned this agreement.

Illinois Power has established a heavy reliance on allowances to comply with Phase I SO₂ emission requirements. This trend caused me also to pass legislation that creates an intrastate allowance tracking system administered by the Illinois Commerce Commission. I believe that an U.S. EPA allowance tracking system will not accurately reflect allowance activity because its reporting procedures can be delayed and only require a one-time reporting of allowance transactions.

I was provided with a list of questions from the subcommittee to respond to, and it would be impossible to go in depth, and I hope my prepared statement will clarify that for the record.

But, in summary, the new State law simply requires the Illinois Commerce Commission to establish a quarterly reporting schedule of the effect of public utilities SO₂ allowance holding, sales, and purchases. The allowance market system is too new and unpredictable to give an accurate assessment, but I believe the system creates a deterrence for long-term capital planning by utility companies and allows individual State public service commissions to prohibit utilities from including costs of further anticipated regulations.

Therefore, a least cost strategy—I think the purpose of the original bill began with—is almost impossible for utilities to factor in for the long-term. There is already evidence that utilities prefer banking allowances rather than sowing the questions by the public service commissions as to the prudence of utilities banking Phase I allowances for Phase II compliance or whether the benefits of the allowances should be distributed to the consumers earlier.

Consequently, individual State prudence standards for allowances undermine the saliency of the allowance tracking system.

In conclusion, compliance with the mandated SO₂ reductions is mainly achieved in the Illinois coal market area, which includes about 11 States through fuel switching to low-sulfur coals. Again, I believe this is measurable only in short-term results when one considers that roughly 50 percent more Powder River Basin coal must be burned to produce the same heat value as Illinois coal. Likely to result will be the increase of carbon dioxides, solid wastes, and other hazardous pollutants which may be facing Federal regulation in the new future—although I understand it could be voluntary.

In addition, one particular Illinois utility plans to offset its decreased coal-generating capacity with a corresponding increase in nuclear regulation.

In conclusion, finally, we believe clean coal technologies or some assistance in trying to survive by a benefit package from the Feds to help our joblessness and devastating economy hang on and produce jobs.

Thank you very much.

Senator SIMPSON [assuming the chair]. Thank you very much, Mr. Phelps. It's always good to hear from a legislator. I did that for 13 years, and, as a legislator, you are very close to the action. I admire people who serve. You presented your case well.

And now it's a great personal privilege to welcome Ms. Mary Guthrie who is a lovely dear friend of many years. When I said that we grew up together, I was much older than she was.

Ms. GUTHRIE. I was thinking that, Senator Simpson.

[Laughter.]

Senator SIMPSON. I wanted to get that clarified. She was just under foot in those days.

Mary, go right ahead.

STATEMENT OF MARY B. GUTHRIE, SENIOR ASSISTANT ATTORNEY GENERAL, STATE OF WYOMING

Ms. GUTHRIE. Thank you, Senator Simpson.

The State of Wyoming appreciates this opportunity to discuss protectionist coal legislation. We have a special interest in this area because 2 years ago we successfully challenged an Oklahoma statute that required coal-fired generating plants in Oklahoma to burn a mixture that included at least 10 percent Oklahoma coal.

In *Wyoming v. Oklahoma*, the United States Supreme Court held that an Oklahoma statute was unconstitutional because it expressly reserved a segment of the Oklahoma coal market for Oklahoma-mined coal to the exclusion of coal mined in other States.

Laws enacted in several mid-Western States are of great concern to States, like Wyoming, in which low sulfur coal is produced. While these laws were passed under the guise of compliance with the Clean Air Act Amendments of 1990, they directly affect the interstate sale of coal by fencing out coal produced in other States. These laws have a great impact on Western States' fuel producers and Western states economies.

Coal is an extremely important commodity in the highly competitive national energy market. While coal is produced in more than half the States, it varies greatly in sulfur content, depending on geographical origin. Western subbituminous coal generally has a much lower sulfur content than bituminous coals.

Title IV of the Clean Air Act Amendments was intended to permit utilities to develop cost-effective compliance plans based on their individual economic circumstances. Because utilities were not mandated to install expensive scrubbers, the most desirable and economical way to comply with emission standards would, in many instances, be a switch from high sulfur coals to low sulfur coals.

After passage of title IV, the States of Illinois, Indiana, Ohio, and Pennsylvania passed legislation to assure the continued use of their own States' high sulfur coal. An examination of the Illinois Act will illustrate the protectionist nature of these laws. The Act's parochial tone is clearly established in its preamble with a legislative finding that the public welfare requires utilities and the Illinois Commerce Commission to consider, "The need to use coal mine in Illinois and the need to preserve the mining of coal in Illinois as a valuable State resource".

The Act guarantees the Illinois coal industry that it will be able to continue to sell coal to two of the largest coal powerplants in Illinois by directing the utilities to install scrubbers. Other aspects of the Act also exemplify the Illinois legislature's efforts to prefer local coal markets. Illinois utilities must file a Clean Air Act compliance plan with the ICC. Approval of a plan seems to be based on whether or not a utility chooses to continue using Illinois coal. Utilities also must get ICC approval if their compliance plan will result in the decreased use of Illinois coal.

Three compliance plans have been approved by the ICC. In each case, the continued use of Illinois coal was selected over switching to out-of-state coal—even when it was not in the best economic interest of the utility or its rate payers to do so.

In its compliance plan Commonwealth Edison clearly stated that the least expensive method would be to use Western low sulfur coal. However, the company recognized that Illinois law prohibited fuel switching.

The Illinois Act and other discriminatory laws interfere with congressional objectives. Title IV was passed so that utilities could find the cheapest and most effective way to reduce sulfur dioxide emissions. By limiting the ability of Illinois utilities to purchase low sulfur coal as part of a compliance strategy, the Illinois Act stands in direct contravention to the comprehensive acid rain control program.

Quite simply, the Illinois Act interferes with the ability of Illinois utilities to choose the best way to comply with title IV.

Title IV reflects the view that individual utilities, and not government entities, should decide how utilities should comply. Recognition that the market place and not the political arena should govern fuel choice decisions is evidenced by the fact that a provision in the House version of the Clean Air Act Amendments that would have allowed the governor of a State to require purchase of local coal was rejected by the Conference Committee.

Several compromises were made to assure passage of title IV. Utilities and mid-Western States were given extra emission allowances. Now, those same mid-Western States are undercutting the purpose of title IV by requiring the use of local coal.

Efforts to assure that the coal mining industry remains viable are not unique to Illinois. Statutes enacted in Ohio, Indiana, and Pennsylvania have the same practical effect of protecting local coal. Other States have also enacted laws that discourage the use of out-of-state coal.

These parochial laws operate to the detriment of all consumers of electricity, taxpayers, low sulfur coal producers, railroads that transport coal, and the States in which low sulfur coal is mined.

The States that have enacted these discriminatory laws should not be permitted to erect barriers to interstate commerce. They should not be allowed to obstruct and dilute the Clean Air Act Amendments of 1990. Congress must address the problems created by these discriminatory laws.

Two years ago at this time I was in Washington to argue the case of *Wyoming v. Oklahoma*. Apparently, even a decision from the United States Supreme Court invalidating a discriminatory

statute has not deterred other States from interfering with the national coal market.

Senator SIMPSON. Thank you very much, Mary. That was impressive and I can see why the Supreme Court successfully heard your argument, and I thank you very much.

And now please, Mr. Richard Abdo, Chairman of the Board and CEO of Wisconsin Electric Power.

**STATEMENT OF RICHARD ABDOO, CHAIRMAN, AND CEO,
WISCONSIN ELECTRIC POWER COMPANY**

Mr. ABDOO. Thank you, Senator Simpson. It's a pleasure to have the opportunity to be here in comment on the 1990 Clean Air Act Amendments.

My company, Wisconsin Electric Power Company, has supported enthusiastically the passage of the 1990 Clean Air Act Amendments. We strongly support the free market approach rather than relying on the old worn out command and control style, which hasn't worked in the past and certainly not in the future.

We actively participated in ARAC. In fact, I chaired one of the subcommittees and found it to be a very exciting, although very difficult, participation in setting rules for the Clean Air Act Amendments. We have and we will continue to commend the U.S. EPA for the creative, productive rule-making process that they originally developed to establish rules under title IV.

During the rule-making and after publishing the final rules in The Federal Register in January of this year, I was absolutely convinced that the targets established in the 1990 Clean Air Act Amendments to reduce sulfur emissions by 10 million tons a year by the year 2000 would be met and exceeded.

Additionally, I was convinced that these reductions would occur much earlier than originally anticipated. However, the past 6 months have caused me grave concern. Nearly 4 months after the EPA published the rules, the final rules, in The Federal Register, they began to take their eye off the ball and sink back into what I perceive to be the old comfort—the old command and control.

Nearly 4 months after the final rules were proposed, they've decided they're going to change them.

Now, I suspect that when the 1990 Clean Air Act Amendments were passed, there was much bartering and much compromise that went into the package that, taken as a whole, would allow the country to breath much cleaner air by reducing sulfur emissions by 10 million tons per year. And if any one portion—a little piece of it—were put under a magnifying glass, someone might find fault if they took it out of context as opposed to the whole bill.

The same is true of the rules. There was a lot of compromise, there was a lot of agony that went into developing rules that kept their eye on the ball and would assure a 10 million ton reduction. Many of us believed it would get there earlier, and all of a sudden, we found one little piece of it that perhaps affects 300, 400, 500,000 allowances somewhere in the year 2000, and we are now going to retreat from the rules and go back—and not use the same process that got us the rules—but go in a deep corner somewhere and develop new rules. We find that very troubling.

You know, all businesses and business executives fear uncertainty. And all of us are more or less subject to some form of government regulation, and we can live with that, provided we have some degree of certainty that we know what we're dealing with. When we know that, we collectively unleash the ingenuity, the creativity, and the challenge among the engineers, and the scientists, and the business community to work to accomplish the objective in the most efficient manner—and beat our competition in doing it.

When you have no certainty that the rules will stay intact for even a short period, it is very disheartening and it drains the enthusiasm for coming up with creative solutions.

We still have a situation where we, as the utility industry, are required to submit and comply with NO_x compliance plans 14 months from today. We still don't have rules. There is not a process in place to establish the rule.

And while I may sound critical of the EPA, let me go back and say what I said originally. I commend them for the brave step forward to do what they did, but we've got to recognize that the goal should be accomplished. And even though there are parts in there that any one of us could take apart and say, gee, that by itself is not so good, we've got to move forward.

We strongly support the free market system. We find that it's working. We've made numerous trades. It would be a lot more helpful and encourage more free market trades if the tracking system were complete. Yes, some regulators and perhaps even some State legislators have gotten very protective because they fear the loss of jobs or loss of economic activity.

But, on the other hand, if we let the free market work, we will see increased demand efforts, increased efforts toward energy efficiency, and will in fact achieve the goal or exceed the goal that we establish. And, if all else fails, this has serious laws and serious penalties. It has an excellent tracking system, which the industry fought for a long time over details of monitoring. If we find into the process 3 or 4 years that it appears we won't meet the targets, then it's probably appropriate to go back and take a look. But we can't even get a compliance plan approved while the EPA tinkers with this little detail in the rules.

In summary, we still favor the Act, and we encourage the EPA and the Congress to continue to use free market approaches for environmental compliance.

Thank you, sir.

Senator SIMPSON. Thank you all, and thank you for your observance of the time, I appreciate it.

I know the Chairman does. He will return eventually. He said when he left, "And I don't want you to pull any stuff while I'm gone." And I said, "Don't bank on it."

[Laughter.]

Senator SIMPSON. That's terrible. I wouldn't do that. But I've been waiting for a long time to get the hammer—no.

[Laughter.]

Senator SIMPSON. Let's go to some questions, and then when the Chairman returns, I'm sure he will have questions.

Let me ask the legislator, and I know your country. My old high school football coach, Bill Waller, was from Benton and coached the Saloukees at Southern Illinois.

So it is a heavily dependent area, and I'm sure that there's a lot of passion about this legislation. But there was a study by the University of Pennsylvania, Center for Energy and Environment, that concluded that the Illinois State legislature cost rate payers up to an additional \$600 million to comply with the Clean Air Act requirements.

Have you considered the cost for rate payers, both industrial and residential and the overall economy of Illinois from the Illinois coal legislation?

Mr. PHELPS. Senator Simpson, I can reflect and remember in negotiations with all parties involved—utility companies, the House and Senate, and the Governor—that in the long-term, both in Phase I and approaching Phase II installation of scrubbers, and I remember this legislation only involves mandates for these two utility companies, which accounts for about 25 percent of the coal market in-state.

Now, we already knew and acknowledged that losing what market we would have out-of-state, we probably wouldn't be able to address that. We were trying to protect this 25 percent of the market within the State of burning of our own coal and utility companies. That rate on a long-term basis with the language in the legislation that takes into account the prudence, the use and useful, the construction while in progress provisions, all those things that the Public Action Committees on behalf of consumers, were also involved. They didn't necessarily endorse the agreement, but they were close to being satisfied as we possibly could be.

So I really take issue with that study, and I'm sure there are some good experts there. But I would debate that.

Senator SIMPSON. I'm sure, that's true.

What economic effects do you expect the Illinois coal bill and laws similar to those described by our Assistant Attorney General—what effect will those laws have on the allowance trading system?

Mr. PHELPS. As I mentioned in my testimony, the allowance tracking system is in its infancy. I think it's somewhat unpredictable. But based on what—

Senator SIMPSON. I mean, the trading system rather than the tracking system.

Mr. PHELPS. OK, I'm sorry. In the trading system, it's on the record already, but like I mentioned, Illinois Power has a study where they traded theirs with—I think some trading with Central Illinois Power Service, which is another utility company. And they used that with low sulfur to at least comply with Phase I, but they are right now, by nature of the Act, leaves utility companies in a quandary of what to do in a long-term planning strategy because they fear further regulation of carbon dioxide might come down the pike.

Therefore, capital expenditures, which they probably would rather encompass, factor in the rates of the rate payers. And, by the way, in comparison with what we have done with this legisla-

tion, we feel there is no doubt it's not going to increase the rate payers' fees.

But, in comparison to this law in the implementation stage with Commonwealth Edison and their situation, I think would still be much cheaper in the long-term.

Senator SIMPSON. Well, as a person who has legislated on the State level knows, the emotionalism and the preventionism that is in there—and I felt it always too, as you do—what do you think will happen legislatively in Illinois if the allowance for clean coal is successful in their lawsuit—just do it again in some creative way?

Mr. PHELPS. Well, we always search for—as you know, you experience ways in trying to still protect when there is a desperate situation, and Illinois—especially Southern Illinois where I come from—we don't have the liberties to diversify—at least we never had. The dependency on coal and agriculture makes up the biggest part of our economy.

So, with that, it's going to be a constant fight to try to find innovative ways to survive and save jobs.

Senator SIMPSON. How about that program that we put in the bill about job training? Is that something that you're utilizing?

Mr. PHELPS. Well, you know, unfortunately, we're the only State program of all the job training programs that train you. But people that want to stay in their homeland in Southern Illinois, where is that job you're training for, and if it's not there, why are we paying money to train them there?

So that's the vicious cycle that people see. Most of them will be trained in the dislocated worker programs or become truck drivers and they're leaving their families for months at a time across the country.

So, you know, that's the problem—where is job placement after job training?

Senator SIMPSON. Here is a serious issue, and there's a lot of debate on it because we found that the decline in the high sulfur coal industry was going anyway. I mean, it was just on a tail down South, and then when Senator Byrd brought it to our attention, why, it became a riveting issue indeed. I can tell you that.

[Laughter.]

Senator SIMPSON. That's why we've passed a lot of acid rain legislation in here, and I've always voted for it—even if it was just trash because I learned that Robert Byrd was there with a catching net, and it would never go anywhere unless it had some sense to it. Finally, we got one with some sense to it, and he insisted that that provision go in, and it did go in.

Let me ask our witness from the EPA. We did the issue of industrial sources, opting into the acid rain program. When does the EPA expect to finalize these proposed combustion source opting rules? Is there anything they can do at the EPA to speed up that process?

Mr. SHAPIRO. We plan to finalize the rules next year. I think we're still the comment period for that proposal.

We will work as hard as we can to issue the final rules in a timely manner.

Senator SIMPSON. I would hope so because that certainly is the key to what we were doing, and a very deep discussion of Senators,

Republicans, and Democrats alike, about that. If you could furnish a copy of this timetable and what you really are doing, who's doing it, and how is it going, that would certainly be something for us specifically.

Let me just say that during the prior administration, a number of us sent a letter to the EPA outlining our concern with this protectionist State legislation, and we asked the EPA then to take actions to correct that.

What can the EPA do about State interference such as the State legislation or the Public Utility Commission regulations that interfere, actually interfere, with the allowance trading system? What steps will the EPA take to ensure that freedom of choice is maintained as a Clean Air Act compliance strategy, which, of course, that was the intent?

Mr. SHAPIRO. Up to this point, Senator, the EPA's primary strategy has been to work in a cooperative manner with the Department of Energy and in the private sector to make sure that there is a good understanding among State legislators and public utility commissions as to how the market system would operate and what the advantages of that system will be to State rate payers and utilities.

At the same time, we believe that the statute doesn't specifically give the EPA the authority to override utility compliance decisions, and what you're talking about in the case of Illinois is ultimately a decision by a utility as to how to comply with the law.

So we believe that from the standpoint of the EPA's legal authority, we don't have direct authority to intervene in that way.

Senator SIMPSON. You will be more than a passive observer?

Mr. SHAPIRO. As we said, we think we are very much advocating an open and free market trading system wherever possible.

Senator SIMPSON. Well, I think it's very important that you clearly express the position about this type of interference with the legislative intent.

Let me ask Ms. Guthrie. Obviously, the *Wyoming v. Oklahoma* case was a precedent case in the area of unconstitutional State actions relating to the Clean Air Act. And, of course, those are the same historical perspectives that we saw with the colonies and the tariff system in the early States and their tariff system and the Supreme Court decisions in the beginnings of our history, and that's also one of the big things with regard to NAFTA. So it just keeps coming on.

But how did the State of Oklahoma respond after the law was overturned?

Ms. GUTHRIE. Well, Oklahoma is nothing if not committed to an approach. After their law was declared unconstitutional, the State legislature subsequently passed legislation that still prefers Oklahoma coal by giving utilities that burn Oklahoma coal a one dollar per ton tax credit.

Even though the new law might not be quite so blatant an approach, the State of Oklahoma is still engaged in protectionist activities.

In fact, I loved to hear Mr. Phelps' comments because the opinions that he's expressing embody the kind of parochialism that the United States Supreme Court has always considered to be a

violation of the commerce clause. It's nice to protect your resident, but you can't do it according to the U.S. Constitution.

Also, it should be noted that all over the country people who work in the mineral industry are facing unemployment problems. In the last 10 years, the over 40,000 Wyoming residents employed in the uranium oil and coal industries, lost their jobs. Per capita, that's certainly a much greater percentage of job displacement than you find in Illinois.

Senator SIMPSON. You know, that is such a truth. The uranium industry literally has disappeared, and we lost in Wyoming—what was that figure?

Ms. GUTHRIE. I think it's 40,000 people, Senator Simpson, and with a total population of only 450,000, that's a high percentage of the population.

Senator SIMPSON. New Mexico and Wyoming were the two largest producers of yellow cake. And with the market, I don't even believe we were able to fit them under the Trade Adjustment Act, and then we tried to do that with the oil industry. It is one of the most wrenching things, and sad on a human scale in every sense.

Ms. GUTHRIE. But that doesn't make the laws right.

Senator SIMPSON. No, the Supreme Court agrees with you.

Are you concerned that these other protectionist activities will continue to grow, and even if the constitutional challenge by the industry is won, that we will see these continuing legislative activities in an ever-creative form just driven by the human aspects?

Ms. GUTHRIE. That is a great concern. Certainly, the more desperate States become, the more imaginative they might also become.

But the problems are not only that these laws are passed, but, that a great deal of time and money has to be spent in fighting these unconstitutional laws. The only people that win in these challenges, obviously, are attorneys.

Senator SIMPSON. Well, the State of Montana has joined in this lawsuit in which you are also a party challenging the Illinois law, and this other aspect, what are the damages that you estimate as a result over the law? What would be the cost in the lost sales of coal to those States, the low-sulfur coal States?

Ms. GUTHRIE. I don't have any specific figures. Also, Senator Simpson, we are not parties in the lawsuit. The States of Montana and Wyoming are *amicus curiae* in the lawsuit. We did not intervene.

Senator SIMPSON. I see, OK.

Ms. GUTHRIE. There is no way to describe exactly how much we have lost at this point. For the last 6 months of this year, Wyoming coal mines sold over 4 million tons of low sulfur coal to Illinois utilities. And so what we would have lost are severance taxes and royalties. The State of Wyoming also will lose potential sales of its low sulfur coal if the laws are permitted to stand.

Senator SIMPSON. That is the other part over the equation—the loss of jobs, and family, and mobility, and opportunity in the low sulfur coal States.

Well, I thank you.

I might ask Mr. Abdoo, how do you think the EPA should properly deal with this substitution issue?

Mr. ABD00. Well, I would leave it alone for the time being and allow companies that have spent considerable time and effort in the spirit of the law with their eye on the ball of reducing emissions early to simply proceed with their plans, recognizing that this particular provision does have—if you will—a loop hole that if people want to game the system, they probably can.

But I submit, the gaming does not interfere with meeting the target of a 10 million ton reduction by the year 2000.

Second, by gaming the system and banking allowances, all they really do is drive the price higher in this 5-10 year period for their customers, and I suspect, as you realize, the folks back home aren't dumb. And they will come to the conclusion sooner or later and put pressure on those utilities who are sitting there banking these things, to sell the allowances.

And, finally, there is this tremendous uncertainty with the free market approach. It's so new and different, and the more the rules are tinkered with after they are put in place, after due process, the less likely it is that a conservative enterprise is going to venture out there into a free market and take a chance and sell these things—or buy them—to assist in making the system work.

So I think it comes down to BUSCON. I call it Business Confidence. If we can have confidence that the rules will be in place for some period of time, things will happen. If we can't, not much will happen.

Senator SIMPSON. Well, your utility has been a leader in using low sulfur coal and innovation, and through your various entities, I believe, even dealing with the K fuels process—or at least that was the discussion years ago that I recall.

Our fellow legislator, Mr. Phelps', tests indicated that you have to burn—this comes to you as a utility executive—that you have to burn 50 percent more Powder River Basin coal to produce the same heat values as Illinois coal. We know the BTU and the water content differences.

But is that statement, would you judge, correct as a utility person?

Mr. ABD00. It basically boils down to the BTU content of the fuel, and I think the 50 percent is probably on the high side. But if you run 8,500 BTUs per pound on Wyoming Powder River Basin coal versus 12,000 on some high sulfur coal, yes, it approaches 40 to 50 percent.

I would suggest, however, that part of what he said is not true.

For example, 100 percent of the ash, the bottom ash and the fly ash, that we produce by burning Wyoming Powder River Basin coal is recycled. None of it goes in a landfill because that type of coal produces an ash which does have other uses whereas it is not so easy to use ash from coals which have a high sulfur content and higher BTU.

So the whole point of it boils down to economics. If we're going to implement social policy through State agencies, where in fact the difficult issue being addressed is either global in nature or national in nature, economics will serve as a good allocator of that. And I submit that the reason that States propose those laws is because it is an uneconomic choice at this point to burn the high sulfur coal, and, therefore, it becomes a protectionist issue.

Over time, economics will prevail and the free market forces are left to act.

Senator SIMPSON. Those are the issues that we discussed throughout, those issues of the low sulfur coal producing less ash for the less solid wastes; scrubbers producing more carbon dioxide than burning low sulfur coal without a scrubber; and the use of scrubbers producing 2 to 3 tons of sludge for every ton of SO_2 removed. And that's a part of your long equation, isn't it?

Mr. ABDON. Sure.

Senator SIMPSON. While much of the Phase I compliance is being achieved by fuel switching, how much switching is going to low sulfur coal and how much to natural gas?

Mr. ABDON. A lot of utilities are in a position where they seem to be adding intermediate and peaking capacity, where they are relying on natural gas, and many of them are using combustion turbines as opposed to the steam cycle, because you get double the efficiency, and you do get a mitigating effect on the environment.

On the other hand, those units that are currently in existence, that are efficient, that were designed to burn coal, many utilities, again, are finding markets where they can get low sulfur coal but with a high BTU content.

For example, we're buying coal now out of New Mexico that has high BTU's, but very low sulfur coal. This coal is going into plants designed and built in the 1950's where their physical configuration is one where the boiler is small, and we're able to meet compliance with very little modification, and, again, utilize the ash by-product for productive purposes as opposed to dumping it in on the ground somewhere.

Senator SIMPSON. Natural gas is going to be an interesting thing to watch in the future. We deregulated it, now we can watch it just simply rise and float out in the free market. It certainly has gone up and will go up, and then you see a country like Holland that is almost exclusively now with natural gas rather than nuclear.

And so these debates go on and on in the world.

Well, I want to thank you very much, all of you. The Chairman has questions. I want to introduce his fine staff person, Joyce Rechtschaffen, and Brett Erickson of my staff. They work together just as the Chairman and I do. He has some questions he will submit to you, and ask you to respond within an appropriate time.

And I thank each and every one of you for being here. We appreciate it very much. It was very helpful.

Mr. PHELPS. Thank you, Senator, and you're welcome to come to Benton, Illinois, any time.

Senator SIMPSON. Yes, but Bill Wallen will make me come back. [Laughter.]

Senator SIMPSON. Thank you very much.

And now we have the second panel.

Mr. Joseph Goffman, Senior Attorney of the Environmental Defense Fund; Mr. Patrick Arbor, Chairman of the Board of the Chicago Board of Trade; Mr. Carlton Bartels, Director of the Cantor Fitzgerald, EBS, New York; Mr. Gerald Kennan, Senior Vice President of Palmer, Bellevue Corporation of Chicago; and Mr. Ashley Brown, Executive Director of the Harvard Electricity Policy Group of the JFK School of Government at Harvard in Cambridge.

If we might have order please, if you could take your discussions outside the hearing room—Mr. Goffman, nice to see you again. I remember your diligent efforts as we struggled. Mr. Goffman. Thank you, Senator. I guess the program must be working out OK since I don't have to come back and testify here with a paper bag over my head, but I'm still keeping my fingers crossed.

[Laughter.]

**STATEMENT OF JOSEPH GOFFMAN, SENIOR ATTORNEY,
ENVIRONMENTAL DEFENSE FUND, WASHINGTON, D.C.**

Mr. GOFFMAN. Senator Simpson and to all members of the subcommittee and the full committee, on behalf of the Environmental Defense Fund, I would like to thank you for the invitation to testify today. We commend the committee for its commitment to provide continuing oversight to the Clean Air Act.

Now, EDF was widely credited for its role in the development of title IV, and given that many of the salient elements of title IV match both the compliance and the emissions trading provisions of EDF's original acid rain proposal, nobody would be surprised if we declared title IV to be a success. Nobody would be surprised and nobody would believe us since coming from us, that would be such a broadly self-serving conclusion.

Nevertheless, in our view, Congress constructed title IV in a way that all but ensures that the program will succeed. After all, the very novelty of emissions trading and the radical flexibility granted utilities seemed to compel Congress to forge an iron-clad compliance scheme that strives to guarantee the emissions reduction results. The total emissions are capped, each source's compliance is defined explicitly in terms of actual emissions, those requirements are absolute, and they attached without further adieu on the date the statute was enacted.

These requirements are guaranteed, as it were, by continuous emissions monitoring and automatic high cost penalties and mandatory offsets.

What unites these features is that they are purely performance-focused. As a result, the likelihood that substantial non-compliance will defeat the program is quite small regardless of what happens in the emissions allowance market.

At the same time, though, there is evidence that the flexibility afforded utilities under title IV is achieving cost reductions. Reported compliance costs and allowances prices are lower than those projected during 1990—even under the most optimistic assumptions about the capacity of trading to lower costs.

Indeed, so long as a single utility succeeds in trading emissions reductions between even just two of its own units, then title IV will have avoided some of the costs that would have been imposed had the Act required unit by unit reduction. Even if not a single allowance transfer between utilities is reported, nor a single broker earns a commission, title IV is likely to reap at least 50 to 70 percent of its cost-savings potential. And that is simply because the allowance system permits substantially integrated environmental and economic dispatching.

Now, remember, the program is only 3 years old so perhaps the greatest obstacle to the development of a full-blown entry utility market is simply the novelty of the program.

Accordingly, opening up such a market may depend on the ability of would-be financial intermediaries to design forms of allowance transactions that resemble the transactions with which utilities are already familiar.

Early this year, EDF reviewed a number of surveys—mostly confidential—by some energy firms, and they all seemed to suggest that conservatively the program would achieve a half million tons of excess annual reductions during Phase I. This is directly linked to the opportunities of market trading, and that's why we find it so counter-productive for States to burden allowance trading with additional inhibiting regulation in the name of environmental protection.

In a similar vein, we believe that State actions to restrict compliance choices run counter to one of the critical policy choices Congress made in designing title IV. By eschewing an acid rain program that dictated a particular set of compliance strategies, Congress recognized that utilities faced emissions limitation requirements and other environmental requirements that ultimately could be expanded to cover toxics and carbon dioxide, as well as other pollutants.

Thus, Congress gave utilities the opportunity to optimize their compliance strategies over the range of pollutants currently and potentially subject to emissions limitation requirements.

Since State policies that constrict utilities' SO₂ compliance options deprive utilities of this optimizing opportunity, we feel that title IV's potential to deliver ancillary environmental benefits, such as CO₂ reductions, could be jeopardized.

In conclusion, the title IV compliance scheme all but assures that the emissions reduction objectives of title IV will be met, a level of assurance of actual performance that few other pollution control programs can claim at the beginning; regulators can narrow their role to guaranteeing that sources actually achieve their requirements, and the sources themselves can focus on selecting the optimal strategies of compliance; regulator intervention in the form of enforcement can be targeted surgically on non-compliers; and innovation is continuously stimulated by the market for clean up represented by emissions trading.

Now, for many, pollutants emissions trading may be completely counter-productive; while for others, it may be perfectly suited. But in any event, the pollution program designer should start by looking to this program as an example of the critical characteristics that all successful pollution programs should share.

Thank you.

Senator SIMPSON. Thank you very much. We appreciate that, you have a unique perspective for all of this.

Now if we might have the testimony of Mr. Patrick Arbor, please.

STATEMENT OF PATRICK ARBOR, CHAIRMAN, CHICAGO BOARD OF TRADE, ACCOMPANIED BY THOMAS COLEMAN, VICE PRESIDENT, ECONOMIC ANALYSIS AND PLANNING

Mr. ARBOR. Thank you, Mr. Chairman, and members of the subcommittee.

My name is Patrick Arbor, and I am Chairman of the Chicago Board of Trade. Accompanying me today is Mr. Thomas Coleman who is the exchange's Vice President for Economic Analysis and Planning.

Thank you for providing us this opportunity to present our perspectives on the sulfur dioxide emission allowance market.

Almost 150 years, the Chicago Board of Trade was founded to provide a reliable and inexpensive mechanism for buying and selling agricultural commodities. From cash grain markets, we evolved into the world's busiest futures market, now serving the needs of agriculture, industry, and finance worldwide.

Market development is our business. Our markets provide an efficient reliable way to buy, sell, and transfer price risk. They also generate prices used as global bench marks. We are now pleased to play an active role in the development of market tools for protecting the environment.

By lowering the cost of cleaning the environment, the emission allowance market created by Congress in 1990 represents a creative win-win environmental policy. The use of markets to protect the environment is part of a growing worldwide recognition that markets are the most efficient means to improve living standards.

Now, starting new markets is not easy. Recognizing this, Congress established annual allowance auctions to stimulate the market, assure allowance availability, and generate price information. Congress gave the EPA the option of letting an outside party administer the auctions. Following a competitive application process, the EPA selected the Chicago Board of Trade. The EPA sets all auction rules, and we receive no compensation.

The first auction, held in March of this year, succeeded in fulfilling Congressional intent. Buyers submitted bids for nearly twice as many allowances as were available, and voluntary offers to sell nearly equaled the number of allowances the EPA sold. A detailed summary of the auction is included in our written testimony.

The auction generated unprecedented price information utilities are now using in deciding how to comply with the law most efficiently. It also gave utilities a chance to test the allowance market. Extensive media coverage, both domestic and international, widely disseminated information on the success of the world's first public trading of emission allowances.

Despite the auction's success, allowance trading has been somewhat restrained. But the program, which represents a revolutionary innovation, is still in its early stages. Innovation takes time.

Based on our experience with other markets, allowance trading will not flourish and the market will not reach its full potential to lower cost until several conditions are present:

First, utilities need incentives to trade. Because the market is new and unfamiliar, the strongest incentive for some utilities is to

hold onto their extra allowances. And others are waiting for more price information and examples of trading.

Second, participants must understand the trading process and feel secure with counter-parties and intermediaries. Since several allowance trades have occurred, clearly some participants understand their options and are comfortable trading, but it will take many utilities more time to review these options and learn the advantages of trading.

Launching EPA's allowance tracking system will also stimulate the market. Without that system, the only official way to record allowance transfers, the potential legal costs and uncertainties discourage trading.

However, utilities in many States are still waiting for their State regulators to issue rules governing the use of market. Clearly, this impedes trading. Moreover, any indication from regulators on any level that the rules governing the market are subject to change will stifle the market. Consistent regulatory guidance is essential for a market to succeed.

And, finally, for the market to grow, trading must produce financial benefits after the cost of regulations and taxes. Several utilities view the Federal tax policy as the biggest impediment to allowance trading. If a utility uses its emission allowance, it pays no additional tax. However, if it invests in expensive pollution control equipment and thus cut emissions, the IRS requires tax to be paid on the full amount realized when the utility sells its unneeded allowances. The large tax reduces the reward for those who cut emissions the most and at the lower cost. It stifles the market by encouraging utilities to hold allowances instead of selling. Other utilities are forced to adopt the higher cost compliance option.

We are working with the industry to develop an alternative tax policy. It must be fair, reasonable, and consistent with other tax regulations. It must also reduce the disincentive to trade allowances. Legislation may be needed to solve this problem.

To the Chicago Board of Trade, it is clear that the market-based solutions to public policy problems work. So we are committed to doing our part to foster the allowance market. Beyond administering the EPA's auctions, we plan to introduce a central cash market for trading allowances and, when appropriate, futures and options contracts. Such products can be valuable tools to protect against price risk, help utilities identify their best compliance choices, and bring more certainty to long-range plans. We are also devoting substantial resources to educating utilities and their regulators on the advantages of this innovative program. We are also working with the industry to address trading barriers such as the tax disincentive.

Just as your subcommittee is looking at the SO₂ allowance program as a model for using market forces to solve other environmental problems, the Chicago Board of Trade is eager to extend this innovative use of our trading services and our recognized price discovery capability to new environmental markets. We anticipate having a full complex of such markets. We have already begun work on recyclable materials and other potential emissions markets as the next step to becoming the U.S. environmental exchange.

Markets and incentives are powerful tools for encouraging competition, lowering costs, and rewarding innovation. Protecting our natural environmental is too important to be addressed with anything but the best tools we have.

Thank you.

Senator Lieberman [resuming the chair]. Thank you, Mr. Arbor. First of all, I want to thank Senator Simpson and apologize to the witnesses that my exit took a little longer than I thought because of the verbosity of my colleagues, I suppose, which I naturally contributed to.

[Laughter.]

Senator LIEBERMAN. And I thank you, Mr. Arbor, that I was able to come in and hear a good part of your testimony and appreciate how much the leadership and the sense of innovation with which you've shown in going after this. I have some questions afterward.

Mr. Bartels, welcome. You're next.

STATEMENT OF CARLTON W. BARTELS, DIRECTOR, CANTOR FITZGERALD, ENVIRONMENTAL BROKERAGE SERVICES, NEW YORK

Mr. BARTELS. Thank you very much. I greatly appreciate the opportunity to come and speak before you, and thank you very much for inviting me here to talk about the implementation of the Clean Air Act and the acid rain program.

And while I am appearing today as someone trying to make the trading provisions of title IV a market reality in my position as Director of Cantor Fitzgerald, Environmental Brokerage Service, my testimony also reflects my experiences as an electric utility planner, the State utility regulator, and the researcher and consultant in Energy and Environmental Resource Planning.

So I have been following these issues for a long time from many different perspectives.

I wish to start by saying that the SO₂ trading provisions of title IV have already proven to be a tremendous success. Before the passage of this amendment, the power producers were being mandated to spend up to \$1,500 to remove a marginal ton of SO₂ and new generation.

Now the marginal investment, as measured by the cost of allowances, is less than \$200. That's a drop of a full order of magnitude, and this is particularly impressive considering that we are going to achieve a very deep reduction in the total amount of emissions.

Under the prior regulatory regime, we were spending a lot of money simply without gaining large reductions—just slower rates of growth. However, the majority of the savings that have occurred under the new acid rain program are due to the fact that we have now given utilities an incentive to clean up their existing facility. It is simply another example of the economic reality that if you give something away from free, it will be treated as if it has no value.

In the past, we gave away the right to emit SO₂. Then, if a facility was open, there is no incentive to undertake further reductions, and, in fact, there was a strong disincentive due to the high economic and sometimes political cost of taking other activities.

The vast majority of sales to date, however, arise from the unique structure of the electric utility industry—in particular, most affected companies control a number of generating units that are under the program. And these companies have achieved significant savings from trading within themselves—that is, among their own units.

As Mr. Goffman just testified, maybe upward of 70 percent of the savings will arise from intra-company savings.

This is naturally a prudent place to start, but it's only the first step to achieving full savings from the program. To really and truly reap the full benefits of the market approach, intercompany trading must evolve, and that is precisely what we are trying to do at Cantor Fitzgerald. We are trying to make this system work, and while we consider ourselves good corporate citizens, our motives are not entirely altruistic—we believe we can make a profit by helping utilities save money through trading. And we also believe that by making this market a success, a number of regional and perhaps international emissions trading programs will arise.

To facilitate market development we have designed a trading system with procedures that are user-friendly to the electric utility industry. Congress was foresighted in creating the SO₂ market place with the Clean Air Act Amendments, those particular laws leave the development of the market place institutions to the private sector. And I applaud the EPA for withstanding significant pressure to be more pro-active in the market development and to adhere to a strategy of allowing others to develop marketing mechanisms.

Developing a usable trading forum is not as simple as putting a new coat of paint on any of our existing markets, where we were very successful. We traded over \$7 trillion of U.S. treasury market, but I can not just repaint the bond market into an allowance market.

As a cost-regulator business, electric utilities have a unique set of issues governing their compliance decision making. In addition, the utilities have very little experience participating in a national trading market. They do participate a lot of trading markets, especially in power markets, but their universe of trading partners are limited greatly by physical constraints. The wires only reach so far.

We believe that to bring success to the emissions trading industry, it is necessary to keep one eye on where we are today and one eye on the future, and we have developed a system that utilizes a contracting structure that utilities have used for 10 years when buying and selling power. That is, cash purchases for forward delivery, and payment. We have put that form into an open and central market structure.

So we are drawing from the best of both worlds and trying to bring a cautious industry into a brave new world. A cash forward market fits their existing planning tools, internal decision making, and, equally important, the current regulatory structure.

However, we have run into a few impediments with implementing our program. One problem was definitely the proposed change to be the substitution role this past summer. It definitely created a retrenchment on the part of our customers. We would encourage the EPA that it makes very clear that that was a one-time event

and that any future attempt or ideas to enter into the market and to try and do it again, could have drastically worst situations and consequences.

The second issue I want to raise is the lack of the ATS, the allowance tracking system. This continues to slow down and be an impediment to the development of more efficient markets.

While we can accomplish some trading through bilateral contracting, that is not the same as developing it through forward market.

Right now, without the ATS, the trading market has its feet bound. If we don't get these binds off soon, they may wind up walking very funny in the future.

It's particularly disturbing that a program that is going to save billions of dollars has been hampered by the lack of developing funds to get things like the ATS up. The auction raised \$21 million, an amount that should have been applied to the implementation of the program and have accomplished a lot.

Some might say that having the utilities pay for this is like a prisoner paying for its own food, but it beats starving.

I do have other comments—

Senator LIEBERMAN. If you could either summarize the remainder or submit them for the record, we would appreciate it.

Mr. BARTELS. They are submitted for the record, and I'm available for questions.

Senator LIEBERMAN. Mr. Keenan, Senior Vice President of Palmer Bellevue Corporation, thank you for being here.

STATEMENT OF GERALD M. KEENAN, SENIOR VICE PRESIDENT, PALMER BELLEVUE CORPORATION, CHICAGO, ILLINOIS

Mr. KEENAN. Thank you, Senator Lieberman.

I would like to focus today on one of the spin off successes of the Acid Rain Program. The other members of the panel have already talked a lot about the success of the acid rain program in getting better, quicker, faster reductions.

One of the great successes of the acid rain allowance program is the interest that it sparked in market-based solutions to other environmental programs, other environmental problems around the country. The leadership that Congress showed in taking a bold step with title IV of the Clean Air Act has provided the opportunity for States to look seriously at market-based approaches to dealing with the problems of title I, which in many states, including Connecticut and Illinois, is far more intractable, far more difficult, and likely to be more expensive than complying with title IV requirements.

You may recall that, Thomas Jefferson called the States the crucibles of democracy because that's where the good ideas came from.

Well, I would argue that at least as far as title I is concerned, the States are becoming the crucibles of innovation in environmental policy because it is from those crucibles that new and different ideas about how to deal with title I and how to deal with the ozone non-attainment problem in the urban areas of our country are really coming.

In Illinois, led by the efforts of the Environmental Protection Agency Director, Mary Gade, we've been focusing our efforts on

trying to figure our market-based solutions to the title I problems for the past couple of years. The State's focus has been on researching, testing, and harnessing the forces of the free market to meet the bold and ambitious ozone reduction goals contained in title I.

For the past 4 months, we've been involved with the Illinois EPA, Commonwealth Edison, the large electric utility in the Chicago area, the Environmental Defense Fund, and John Calcagni from Uthrie Ventures in working together on a collaborative attempt to design a NO_x Trading System in the Chicago metropolitan area that would get us to attainment on a faster, quicker, and better basis than command and control mechanisms.

As you may be aware, like the New York area, Chicago is a serious non-attainment area. There are a lot of reductions to be gotten in a very short period of time, and Illinois and Director Gade have concluded that the old command and control methods just aren't going to work.

What command and control got Illinois in the past was years of litigation, a deep mistrust between the regulated community and the Illinois EPA, the implementation of a Federal implementation plan forced on us by Federal Court, and everything else, but we didn't the required reductions in the ozone level.

Last year the Illinois EPA went through and developed a Cash for Clunkers program that brought up—

Senator LIEBERMAN. What was that? Cash for what?

Mr. KEENAN. Cash for clunkers.

Senator LIEBERMAN. For clunkers, OK.

Mr. KEENAN. It is a program in which the Illinois EPA, in cooperation with General Motors and the EDF and seven other Chicago companies, bought 209 pre-1980 high emitting vehicles. The price for the vehicles was based upon the expected emission characteristics of the vehicles.

Basically, every one of the vehicles was tested using the IM240 methodology. The conclusion was that a full-scale program would get NO_x and VOC reductions at about \$2,500 per ton, which is in comparison to estimates of anywhere between \$3,000 and \$5,000 per ton for other programs.

We then began working on this NO_x Trading System. There's more detail in my testimony about the NO_x Trading System, but let me give you a couple of points that we think are important about the proposed NO_x trading system. It has been out for comment for the past month and yesterday was the subject of a big workshop in Chicago among environmental groups, the State agencies, other government agencies, and the emitters and some of the members of the NO_x Design Team. Mr. Goffman has worked with us on that. He was there; I wasn't. So he could probably fill you in if you have any other questions.

The Illinois draft program does some very important things, and they're very similar to the acid rain program.

First of all, it guarantees measureable and quantifiable reductions—not guesses, not models, but guaranteed monitored reductions so you know what you're getting and the integrity of the system will be maintained. There will be a cap on all stationary NO_x sources, which will decline over time until attainment is reached. The seasonality of ozone production is recognized. We're

not going to try to control ozone in December. At 15 degrees below zero, you don't produce a whole lot of ozone. We don't have a CO problem in Chicago so that's not a focus of our efforts.

Flexibility and innovation are encouraged because nobody has a good idea about exactly what NO_x technologies will work and what effect fuel switching may have. So the Program encouraged emitters to use their creativity and get the lowest, best cost of reductions possible.

The IEPA is like to move from being the writer of permits to being the policeman of the system—maintaining the integrity of the system, but not trying to make decisions for the businesses that are involved in the country.

Compliance will be easy to measure and the penalties will be swift and severe, not the subject of years of litigation.

My only encouragement to you, Senator, and to the other members of the committee is that you should take steps to encourage the U.S. EPA to allow States the flexibility to try different mechanisms for market-based approaches to title I. We're very concerned that there will be an unwillingness of the U.S. EPA to permit some of these innovative approaches. The State of Connecticut is coming up with something that is different from the approach that we're taking, but, yet, nobody knows which approach will be best. It really does make sense to allow the innovation to flourish at the State level and to provide some opportunities for us to see what does work. If what we try doesn't work, we still have to meet the ozone attainment levels by the year 2007.

Thank you.

Senator LIEBERMAN. Thank you, Mr. Keenan.

And finally, Ashley Brown, Executive Director of the Harvard Electricity Policy Group. Thank you have being here.

STATEMENT OF ASHLEY BROWN, EXECUTIVE DIRECTOR, HARVARD ELECTRICITY POLICY GROUP, JOHN F. KENNEDY SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY

Mr. BROWN. Thank you very much, Senator Lieberman. I appreciate the opportunity to be here.

As you mentioned, I am now at Harvard University, but for the past 10 years, I was the commissioner at the Ohio Public Utilities Commissions and spent a great deal of time—more time than I ever wanted to—dealing with clean air issues.

What I would like to do is comment on how State PUCs are coping with or dealing with the implementation of the acid rain provisions of the Clean Air Act, and also talk a little bit about some of the approaches that States may well take.

Let me start off by just noting that judging the allowance trading system and state regulatory approaches to it in Phase I that I think would be quite inappropriate. Number one, the number of States that are impacted are far smaller in Phase I than in Phase II. The way that plants are impacted in Phase I, you're talking about 110 designated units with large compliance costs. In Phase II, you have more units with more marginal compliance costs.

So I think to really evaluate the market, we're going to have to wait until Phase II. Unfortunately, I think there are a number of

regulatory commissions that are waiting until the impact hits them before they move.

On the other hand, a number of commissions have moved. Two States—Ohio and Pennsylvania—have guidelines on how they're going to evaluate utility conduct.

But let me put this into perspective as to some of the constraints, I suppose, the PUCs have to operate on in implementing the Act.

One of the biggest constraints is this is an entrepreneurial, a market-based system, that provides probably the most conservative risk averse industry in the United States with the opportunity to reduce costs in environmental compliance. What it does to some extent, because of the choices, is it increases risks as viewed by a risk averse industry; whereas previously under command and control, you simply built what you were told to build and you recovered the cost.

So there's a bit of a culture change here, and that culture change comes into a situation where the traditional line between what is regulatory and what's management judgment and prerogative are quite different. Traditionally, commissions waited for the utilities to act and then reacted to them in some sort of quasi-judicial proceedings.

Obviously, in a new market like this, it calls for new kinds of skills, it calls for being ahead of the curve rather than behind the curve, and the need to get beyond that traditional line. And many State regulators have begun to move in that direction while some have not. And we do this in a context where, as has been noted by a number of witnesses, we have the absence of any real consistent price information that would stimulate both a risk averse industry and regulators who are traditionally more passive than their statutory roles from getting into the act.

But there are some other constraints under which the regulators are going to act.

Number one, and Senator Simpson discussed this with the first panel, is the question of parochialism. Clearly, State commissions cannot afford to be totally insensitive to local concerns, and those local concerns may be whether you happen to have high or low sulfur coal in the ground in your State, but there are also concerns about the local environmental impact. Congress, in adopting the Clean Air Act Amendments in 1990, did a number of things—some perhaps intentionally; some, I'm quite sure, inadvertently—which stimulated some degree of parochialism.

For example, the rejection of the Byrd amendment for benefits of miners who were put out of work naturally enhanced the likelihood that States with miners who were going to lose their job as a result of the Act would be very sensitive to that economic impact.

By creating a national market which didn't recognize local impact differences, environmental differences, of the impact of the SO₂ deposition, obviously, that created a situation where some States feel that the trading market—and New York in particular—feels that the trading market may work an adverse impact on its environment.

I happen to disagree with that, but I understand the concerns and I'm sure it was inadvertent that Congress in essence heightened that concern.

The distribution of allowances, no one, I think, could contend to watch the distribution of the so-called bonus allowances and reward allowances, that there was no element of parochialism that didn't enhance regional rivalries and concerns.

So all of those things, in most instances, inadvertently did create a heightened level of parochial concerns in every State that's impacted by Phase I or potentially impacted.

Other areas relate to Federal actions that even have or haven't occurred, some of which have been testified to. Certainly, the EPA's change on the substitution does not help. The absence of an allowance tracking system, I think, is a major deterrent because it removes a major stimulate, I should say, from getting both the State regulatory bodies and utilities involved.

The lack of FERC action on dealing with the allocation of allowances within registered holding company systems and between retail and wholesale requirements customers is an enormous problem since about roughly a third of the initial allocation of allowances would apply to those kinds of entities—either registered holding companies or wholesale requirements customers. That's created a major problem. So those are some of the constraints.

On the other hand, States clearly have taken the lead—certainly, Ohio and Pennsylvania have taken the lead—in providing some guidance as to evaluation what's prudent and what's not.

Let me just conclude by noting that when States take these actions not only are they changing the boundaries between what traditionally is a regulatory prerogative and a management prerogative, but, for the first time, State commissions are going to have to act, get actively involved, in deciding the prudence of what utilities have chosen not to do. And regulators will need to create an environment where it's every bit as risky for a utility to sleep through a favorable market as it is to recklessly speculate in an unfavorable market.

Thank you, Senator.

Senator LIEBERMAN. Thank you, Mr. Brown, for that very interesting testimony.

Mr. Goffman, welcome. I'm sorry I missed your oral presentation, but I've read your testimony. I don't know whether anybody pointed out, we've talked about history here today. You yourself have invited the history of this Act, having worked in Congress, then working to enforce it, now working to make sure it's properly enforced.

Anyway, I thank you for all you've done.

There were discussions, I know, about the EPA substitution rule, and I want to ask you why EDF believed it needed to be changed and what do you think will be the impact on the market from a change in the rule?

Mr. GOFFMAN. Well, thank you for your kind remarks, Senator, and I think that Mr. Abdoo of Wisconsin Electric put the issue pretty well. He himself characterized the problem as a loophole and suggested that the cost of fixing that loophole at this point was to introduce a level of uncertainty that could impede the program.

It seems to us that the way to resolve the dilemma he posed is for the EPA to move as expeditiously as possible to close the loop hole and make it clear through the rule-making process that the

loophole-free rules are the ones that will govern this program, and I understand that the EPA is trying to do just that.

So it seems to me that if they can get the loophole closed quickly, then the uncertainty problem will go away. And, as you yourself know, the vast balance of the program is statutorily formulated so there is very little likelihood that this kind of problem will arise in the future.

We felt that the loophole that Mr. Abdoo also identified had to be closed because it went right to the heart of title IV. This committee and the entire Congress worked very hard to ensure that under no circumstances would emissions trading result in fewer reductions or more emissions.

Now, the substitution provisions in title I allow utilities to use the basic concept of emissions trading between Phase I and Phase II units, notwithstanding the fact that Phase II units aren't included in the Phase I program.

So what the statute very clearly did was say there are circumstances in which a Phase I unit can trade with a Phase II unit, but only if that trade does not result in fewer emissions reductions. And the statute could not have said that more clearly.

Unfortunately, in calculating the way allowances would be allocated to the Phase II unit in that circumstance in order to enable trading, the EPA current rule—the rule that appears to be on the verge of being changed—would permit Phase II utilities to get allowances for reductions that had already been made or had already been programmed. And those traded reductions from the Phase II unit would result in fewer reductions from the Phase I unit. That is precisely what Congress was adamant about precluding.

And it's simply for that reason that we thought it was—frankly, we recognized the cost in uncertainty that that litigation would bring. But it was worth it, and the EPA is in the perfect position to speed up the process and dissolve that uncertainty.

Senator LIEBERMAN. I appreciate your answer.

Mr. Arbor and Mr. Bartels, each of you represents a market that differs somewhat from the other, a market in development. And I wonder if I can ask you to join the issue—sum up—so that they're not at length, and if you would describe why you think a particular market that you're developing will attract the interest of utilities perhaps more than the other.

Mr. ARBOR. Well, we at the Chicago Board of Trade feel that our market offers a full complex of trading services ranging from the cash markets to futures and options contracts that are all registered with the Commodity Futures Trading Commission.

Our futures and options contracts have already been approved for trading by the CFTC. We also offer a performance guarantee through our clearing corporation and various regulatory protection.

So all in all we feel that the market that's offered at the Chicago Board of Trade provide a very good forum for these emissions auctions to occur, and we were selected by the EPA to conduct the first auction I think because of our 150 year history and markets, and our regulatory environment, and our clearing mechanisms.

Senator LIEBERMAN. Sure.

Mr. Bartels.

Mr. BARTELS. First, I would like to point out that Cantor Fitzgerald and Company is a member of the Chicago Board of Trade, and, therefore, if the Chicago Board of Trade is successful, we'll be participating in that market also.

My experience as a planner in the utility industry, however, suggests that the utility industry is not really ready to immediately utilize such tools as futures contracts for allowances. They like great certainty and want to know that if they are not going to build a scrubber or change their fuels but are going to rely on allowances that they have those locked in for a period of time equal to whatever that planning horizon is. So that might be a 5 or 10 year planning decision. They want to know those allowances are coming to them, and that's why you see trades now on private contracts that do exactly that—that guarantees a supply of allowances for 5 or 10 years.

Futures contracts are not that well-suited for hedging such long periods of time.

Also, there is nothing in cost regulation that really allows at the present time for cost recovery of margin accounts and things like this. This needs time to evolve for utilities to learn how to use the tool, for the management to accept it, and for the regulators to change some of the accounting rules.

The other option is cash today. Buy all of your allowances and write a check today. That's also problematic—and you're talking about a 10-year supply of allowances that cost maybe \$100 million is not a very attractive option. That means you have to float debt, you have to raise payment.

What utilities like instead is the way they buy fuel and power—they want to lock in the supply for a 5- or 10-year period, and they want deliveries every year, and they want to pay as they go.

Senator LIEBERMAN. Is there room for both approaches here or is this an area that can only really sustain one market?

Mr. BARTELS. Well, I believe that if we're successful in bringing our type of market into being, it will act as a natural stepping stone toward the futures market.

Senator LIEBERMAN. OK.

Mr. ARBOR. Yes, I think there's room for both markets. We have both markets now at the Chicago Board of Trade. We compete with the over-the-counter market to some degree, and I think there is room for both markets.

The Chicago Board of Trade, however, has been selected by the EPA to conduct these auctions. We conducted the first auction last March. We're going to be conducting this over a 3-year program, and it just seems a natural adjunct of that auction that eventually we would develop futures contracts. I would think that our futures contracts because of the regulatory environment and because of the clearing mechanisms that we provide would be superior to those of the over-the-counter market.

Senator LIEBERMAN. I thought in your testimony the point that you made about the IRS' tax treatment of allowance sales discouraging trading was an interesting one. And either now or perhaps in writing before the committee I wonder whether you have a substitute approach that avoids the problem without giving people the impression that we're creating a windfall for the utilities.

Mr. ARBOR. Well, it's just a fundamental question of fairness because the allowances aren't assigned any allocation for the assets, the capital assets, that the company utilities pay for to produce those allowances.

Now, certainly, a zero basis for capital treatment of the allowances isn't fair because to produce those allowances did require a capital investment by the utilities. We feel that some portion of the capital investment to the allowances should be allocated to the allowances, provide some kind of basis so that they're not taxed at 100 percent.

Senator LIEBERMAN. Yes, that's an interesting suggestion. I appreciate it.

Mr. Keenan, in your testimony, you've indicated that the major problem facing utilities is uncertainty over how the States are going to evaluate and allow for compliance cost.

I wonder if there are ways that you think that Congress could act to help produce those uncertainties.

Mr. KEENAN. I think there are two ways that Congress can help to reduce the uncertainties.

Most important, I think continued oversight by your committee and other concurrent jurisdiction committees in the House which reminds everyone that this is a national program and that the aim of this is to get more reductions faster, better, and quicker will be helpful and will encourage the States to reduce the parochial approach that they bring to this cutting-edge environmental program.

And I, frankly, think that an even more expansive look at the tax policy is necessary. One of the things that really takes away from the economics of a trade is that 40 percent, on average, of the money that any utility will get from the sale of an allowance will go in Federal and State income taxes. This means that if you want to net \$175 for your allowances, you have to charge almost \$300 in order to net \$175.

And, so, in order to encourage more liquidity in the market, more utilities going out into the market to either sell allowances or to buy, that particular problem needs to be addressed.

The underlying issue is that the IRS is treating an allowance as a free good, that the government is giving to utilities, and, therefore, it has zero basis. And that notion may not be applicable since this is Congress' attempt to try to solve a national environmental problem.

Senator LIEBERMAN. Yes.

Mr. Brown, you stated in your testimony that we can call it parochialism by the States and maybe even by the environmental groups was to be expected and that it does not constitute a threat to the overall liability of the market here.

I wonder if you could elaborate on that a little bit.

Mr. BROWN. Well, the parochialism is inherent. If you think about the politics of acid rain debated, it had nothing to do with partisan politics. It had everything to do with where one lived, and there is no way to avoid parochialism in an approach to the acid rain problem. It's just inherent, and I think we have to face up to that.

But the fact of the matter is markets that are resilient are going to respond to decisions made on the margin. It may well be true

that if Illinois mandates scrubbers at certain plants, that will impact the market. But it hardly destroys markets. It changes what happens, it may change what opportunities there are for participants in the market, but it doesn't destroy it.

If New York decides that New York State utilities ought not participate in the market at all or in certain ways, I think that would be unfortunate. I think it would not help the market, but it certainly isn't going to destroy it. It just changes some of the dynamics.

So I think the concern about parochialism is understandable, but I think we ought to view it as being endemic in the issue and simply work on the other kinds of institutional constraints—a lot of which you've discussed in tax policy, in Federal regulatory policy at the EPA, at the FERC. And I think once those kinds of uncertainties happen, then I think we need at the State and regulatory level as well as at the utility level to work on the kind of cultural change that's necessary to get this market up and running.

Senator LIEBERMAN. Thank you for that answer.

Joe, let me come back to you, and it's somewhat related in your testimony. I know you estimated that title IV is likely to reap 50 to 70 percent of its cost-saving potential without any trading of allowances among utilities.

So I wonder, assuming that, whether Congress really should worry very much about the inefficiencies that State regulation or tax policy or other factors might impose on the trading?

Mr. GOFFMAN. I think the answer is that even though the percentages are big in terms of gains from intra-utility dispatching, the billions of dollars involved in additional cost savings that can be achieved if there is a fluid inter-utility market justify continued attention by Congress and the efforts of folks like those on the panel to make that market a reality.

So it may sound like—well, I can put it bluntly. I think you're in a wonderful position to have it both ways. There is a pretty high floor of success that was virtually built in. At the same time, there still is real money at stake for rate payers and the economy if the transition from the intra-utility to the inter-utility market can be successfully made.

Senator LIEBERMAN. It's an up note on which to end. There's a vote that's about to go off on the Senate floor.

I want to thank each of you for taking the time to be here, for your testimony. We're going to keep the—for your responsiveness to my questions, we're going to keep the record open for 2 weeks if any of you or anyone else wants to submit additional testimony or if we have some questions that we want to send to you.

I appreciate this very much, and, again, going back to what we said at the beginning and you have validated it as we have gone on, this was an extremely innovative approach in title IV. And the good news is that—and it is really so far the best news out of the Clean Air Act enforcement—is that it is working well, and we continue to want to be interested in it and provide some oversight and provide whatever help we can. If the road gets a little rocky, to keep it moving forward.

So I thank you very much. The hearing is adjourned.

[Whereupon, at 11:34 a.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record and responses to additional questions follow:]

TESTIMONY OF
MICHAEL H. SHAPIRO
ACTING ASSISTANT ADMINISTRATOR
FOR AIR AND RADIATION
ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR REGULATION
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

OCTOBER 21, 1993

Good morning Mr. Chairman and members of the Subcommittee. I am pleased to be here today to discuss the Environmental Protection Agency's efforts to implement the Acid Rain provisions of Title IV of the Clean Air Act Amendments of 1990. By employing market mechanisms to reduce emissions, Title IV created a unique opportunity to protect the environment at the lowest possible cost.

Acid deposition, or acid rain as it is commonly known, occurs when sulfur dioxide (SO_2) and nitrogen oxides (NO_x) react with water vapor and oxidants in the atmosphere and are chemically transformed into acidic compounds. The compounds then fall to the earth in either a wet form in rain or snow, or as dry deposition, such as gas and particles. The dominant precursor of acid rain in the U.S. is SO_2 from coal-burning power plants. Emissions of NO_x , primarily from motor vehicles and power plants, also contribute to acid rain. In fact, electric utility plants account for about 70 percent of annual SO_2 emissions and 30 percent of NO_x emissions in the United States. Over 20 million tons of each of these two pollutants are currently emitted into the atmosphere every year damaging surface waters and trees and accelerating the decay of building materials. In addition, recent research indicates

that sulfur emissions form sulfates which in turn contribute significantly to the formation of particulate matter. Particulate matter (elevated concentrations) is a major human health risk. In addition, acid sulfate aerosols contribute significantly to regional visibility impairment. Recent research indicates that such particles may represent a more serious health threat than heretofore expected.

Other regulations and guidance issued under the Clean Air Act also reduce pollutants that cause acid rain. For example, rules have been promulgated or proposed to remove sulfur from gasoline and diesel fuels. Also, major NO_x emission reductions are expected from programs to reduce ozone, such as Reasonably Available Control Technology (RACT) for NO_x and vehicle tail pipe standards.

Title IV sets as its goal the reduction of annual SO₂ emissions by 10 million tons below 1980 levels. The Act also calls for a 2 million ton reduction in NO_x emissions.

The Acid Rain Program represents a dramatic departure from traditional command and control regulatory methods that establish specific, inflexible emissions limitations with which all affected sources must comply. Instead, the program uses an allowance trading system that harnesses the incentives of the free market to reduce SO₂. Under the market system, affected utilities are allocated allowances annually through statutory provisions based on their historic fuel consumption and a specific emissions rate. Each allowance authorizes the holder to emit one ton of SO₂. We have allocated allowances to utilities in the limited quantities mandated by the Act, at about 50 percent of the level they were emitting in 1980. Allowances may be bought, sold, or banked. At the end of each year, utilities must hold enough allowances to cover emissions.

To guarantee accountability for emissions, instill confidence in allowance transactions, and ensure achievement of the Act's emission reduction goals, the Acid Rain Program requires each unit to continuously measure and record its emissions. As we speak, plants across the country are installing continuous emission monitoring systems (CEMS).

Title IV tackles the acid rain problem and meets the four goals Administrator Browner articulated when she was before you last month discussing EPA's efforts to implement the Clean Air Act Amendments. Administrator Browner said that EPA will ensure that we protect health and the environment, minimize costs, encourage pollution prevention, and support innovative technologies. Environmentally, Title IV not only mandates a substantial emission reduction, but, for the first time, permanently limits emissions. Emissions of SO₂ from utilities will be capped at 8.95 million tons. Adherence to the cap is ensured by stringent emissions monitoring of every affected source, and mechanisms for imposing automatic statutory penalties for noncompliance, both of which are required by Title IV.

From an economic standpoint, the market-based SO₂ program established in Title IV provides unprecedented flexibility for utilities to comply with the emission reduction requirements. At the time the Amendments were passed, we estimated that the market approach would cut the compliance costs for utilities and ratepayers by at least 20 percent over traditional control approaches.

Moreover, the compliance flexibility provided in the market approach provides incentives for utilities to use cleaner fuels. An analysis of Phase I compliance strategies indicates that over half of Phase I utilities will switch to cleaner fuels.

The market also encourages energy efficiency, a key pollution prevention strategy, and promotes the use of new and improved technologies.

It is clear to us that by combining flexibility with accountability in an effort to get substantial emission reductions at the lowest possible cost, the Title IV market-based SO₂ allowance program is establishing a model for future market approaches to protecting the environment.

Furthermore, we found that this type of innovative regulatory approach works best when developed with maximum input and extensive efforts to achieve consensus from relevant parties. To help implement Title IV, EPA called on leaders in the various communities that would be affected by the Acid Rain Program. Before the Amendments were enacted, EPA created the Acid Rain Advisory Committee (ARAC) that consisted of 44 representatives from utilities, the environmental community, Public Utility Commissions, State air agencies, labor, the coal, gas and control equipment industries, and academia. Through 13 days of meetings over 5 months we consulted with these advisors to try to find the best ways to meet our goals in implementing Title IV.

The ARAC process was a tremendous success. Through ARAC we were able to resolve many policy issues and generate the public and private momentum needed to promulgate the core rules and effectively implement the program. The ARAC process not only helped resolve critical issues, it lowered barriers of mistrust built up over years of acrimonious debate, and began the process of building bridges between government and industry that are essential to successful implementation.

In 1991 and 1992, most of our efforts were devoted to developing the implementing regulations. In the three years since passage of the 1990 Clean Air Act Amendments, we have promulgated all the rules governing the SO₂ allowance system, including the allowance allocations for over 2,000 utility units, rules governing auctions and sales, permitting procedures, continuous emissions monitoring requirements, penalties for noncompliance, and administrative appeals procedures. We have also issued proposed regulations for NO_x control and the opt-in program, and will complete these rules as expeditiously as possible.

Now, our attention is turning to implementation. In the past year we held three major national implementation conferences across the country that attracted over 700 people. Other highlights of this year have included:

- Conducting the first allowance auction with the Chicago Board of Trade.
- Holding a lottery through the Federal Communications Commission to allocate 3.5 million in Phase I bonus allowances.
- Receiving all Phase I permit applications on time in February, proposing for public comment 182 draft permits, and issuing 50 final permits to date.
- Receiving all Phase I monitoring plans. (It is expected that the utility industry will certify all their Phase I monitors by the November 15, 1993 statutory deadline).
- Holding an Energy Efficiency and Renewables Conference with over 200 participants.

Despite these accomplishments, it will be a long time before the Acid Rain Program is fully implemented and we can comprehensively judge the market approach. Phase I begins a little over a year from now. However, even in Phase I, only a fraction of the utility plants in the country will be in the market. It will not be until Phase II begins in the year 2000 that all utility plants will be in the system.

In the meantime, some early activity is evident in the allowance market and some early assessments can be offered. The trading system appears to be working. While EPA's

knowledge about trades is limited to what information has been announced publicly, we are finding that the players are, for the most part, doing what is needed to facilitate least-cost compliance strategies which is the purpose of allowance trading. In fact, I am pleased to report that the new analysis we completed last year showed that trading would reduce costs up to 30-50 percent over a scenario with no trading.

EPA has carefully considered what role it should play in the development of the allowance market. Congress did not give EPA authority to direct the development of the market. Congress instead relied on the private sector to devise mechanisms for supporting a successful allowance market and cost-effective compliance. We want to make sure that utilities have the maximum amount of flexibility to choose their compliance options, consistent with statutory requirements. Furthermore, we believe the private sector, not the government, is best equipped to provide the range of services needed to support efficient SO₂ trading. Such services include private auctions, bulletin boards announcing trades, and price information.

Nevertheless, EPA is, properly, the official custodian of all the allowances created under Title IV. Our role in recording transactions for compliance purposes is critical to the establishment and maintenance of the integrity of the allowance system and the emission reductions that are required by law. EPA's Allowance Tracking System (ATS) will hold and track allowances worth about \$100 billion. The ATS must possess and demonstrate financial integrity and the appropriate security and oversight to assure that all assets are properly handled. This fact mandates that getting the system right the first time, with proper internal controls is essential to the success of this program. We understand the desirability of being

"open for business" so that trades can be recorded. While ATS development has taken longer than anticipated, we are working hard on developing ATS and hope to have the system operating early next year. Meanwhile, private trading will continue.

Observers have also expressed concern that EPA is not working aggressively to ensure that all State PUCs have rules governing allowance transactions. It is important to recognize that Title IV limits EPA's authority regarding state laws that deal with utility ratemaking policy, regulations or other economic issues. Congress, in §403(f), gave States the lead in developing ratemaking rules and procedures that affect compliance decisions. Therefore, given the limitations in the statute, our approach has been to use education and persuasion to encourage PUCs and utilities to adopt least-cost compliance approaches. Along with the Department of Energy, we have sponsored four regional workshops on the Acid Rain Program for PUC staff and commissioners. We have visited a variety of State PUCs to explain the program, and participated in such efforts as the Keystone Center Dialogue on Allowance Trading, which brought together a wide variety of utility interests to discuss appropriate regulatory treatment. A small number of states have provided official guidance and more have told utilities informally how allowances will be treated. More action would foster certainty for utilities in their planning, but we believe that Congress appropriately kept all ratemaking authority with States and the Federal Energy Regulatory Commission in their respective areas.

Another factor that could inhibit the allowance market is the potential for States to review allowance trades to determine their environmental impacts. Not only would such an action directly contradict the free trading principle established in Title IV, but their

environmental benefits are questionable. Most trades will not be large enough to cause measurable positive or negative impacts. More importantly, such actions cannot prevent emissions from occurring at specific locations outside the State. Sources outside a State can continue to buy and sell allowances to whomever they please, including the sources a particular State is concerned about. Furthermore, restrictions on trading take away the economic incentive for utilities to make early reductions. We hope that the legislators in those States concerned about environmental impacts on their States will agree with us that such action is unnecessary.

While State action to review trades has only been proposed to date, some States have passed legislation to affect the compliance choices of their utilities. EPA was not given authority from Congress to regulate compliance choices, whether they are made by the source or the State. We have been asked to participate in lawsuits challenging these statutes, and we certainly support the right of the parties challenging these statutes to exercise their rights.

Although there are some States considering imposing restrictions that could inhibit flexibility, EPA is optimistic that few, if any, constraints will remain by the time the program is fully implemented. Everyone involved in developing this program has had to climb a steep learning curve on this new market approach, and we recognize that States and PUCs also need the time to understand the allowance trading system and conduct analyses before providing formal guidance and regulations for their utilities.

The environmental benefits of the allowance trading are already becoming evident. Given what we know at this time about planned compliance choices, it appears that the

allowance system, particularly the banking feature, will lead to the creation of reductions in Phase I. In other words, the environment will see reductions sooner than if there had not been an allowance system. Many Phase I utilities are likely to be banking allowances to ease the transition to Phase II. This ability to smooth the impact of the Phase II emission reductions is another benefit of the market approach.

In addition, Title IV encourages energy efficiency and the use of renewable energy in a number of ways. The cap provides a strong incentive for pollution prevention through energy efficiency and renewable energy because they do not require allowances.

A number of energy efficient and renewable technologies have become even more cost effective because they avoid the need to retire valuable allowances. Some of the technologies that benefit from this type of allowance subsidy include solar water heaters, ground-source heat pumps, solar photovoltaic applications, and high-efficiency wind turbines.

Also, the Conservation and Renewable Energy Reserve provision of Title IV has attracted considerable attention to using pollution prevention to reduce emissions. We will award the first incentive allowances next month. One of the most important aspects of the reserve is the requirement that States must have electricity ratemaking and planning policies that encourage energy efficiency and renewables for their utilities to receive bonus incentive allowances. Several States have been inspired by this provision to review or change their ratemaking and planning policies.

Finally, we are seeing evidence that the market approach is spurring advances in technology. Most of the scrubbers being built in Phase I at existing plants have sulfur removal efficiencies greater than the 90 percent reduction required at new plants by the New

Source Performance Standards. In fact, the vendor at one plant is guaranteeing 98 percent sulfur removal. Additionally, at other facilities, where it was previously not thought possible, utilities are finding ways to burn the very low-sulfur Powder River Basin coal or to burn mixtures of coal and natural gas.

Overall, EPA is enthusiastic about the Title IV market-based approach for achieving substantial environmental protection at the lowest achievable cost as we complete the steps toward implementation. The Acid Rain Program can serve as a model for future efforts to employ market mechanisms to achieve environmental results, and I would like to share a few observations from our experiences to date.

First, many of the features in the statute have worked very well for the Acid Rain Program. Based on our regulatory experience and after evaluating early allowance trades and compliance plans, we have found the following to be particularly useful:

- Establishment of baselines and allocation formulas.
- The annual emissions cap.
- Stringent requirements to continuously monitor emissions.
- Automatic penalties that include excess emission fees and allowance offsets.
- Limiting government involvement in compliance decisions.

In addition, as can be expected, we have also learned valuable lessons as a result of developing regulations to implement the program. For example, Phase I has been a challenge to implement because it only requires a fraction of the power plants in the country to reduce emissions, but allows several hundred other Phase II plants to move into and out of the system at their own discretion during Phase I. It would have been preferable to have a system where all sources are included in Phase I and subject to a cap, or where Phase II sources would not have the option of entering Phase I.

Writing workable rules that ensure appropriate emissions reductions has been a challenge. In fact, we found that when we developed our rules to implement Phase I, we failed to adequately capture the letter and intent of the statute with regard to the provisions that allow sources in and out of the system (the substitution unit and compensating unit compliance plans). We are, therefore, currently making corrections to the existing rules that will prevent approximately 1 million excess allowances from being created.

On reflection, EPA believes that a two-phase program structure to either (1) limit the ability of Phase II sources to enter and exit in Phase I or (2) include all sources in both steps of a two-step reduction plan might be preferable. In that vein, future market approaches might consider allowing the government to charge reasonable fees for services provided. We believe the allowance market customers could be better served if we had a customer-supported system. For example, EPA is promising that transfers will be recorded in ATS within 5 days after receiving the transfer form. Potential market participants have indicated they would prefer faster recordation and would be willing to pay a fee to receive the enhanced service.

Finally, with greater flexibility to determine the type and frequency of auctions the Agency would be better able to respond to the needs and changes of the allowance market. Future market-based programs could allow the government greater flexibility to terminate or modify such a service when it is no longer needed. We found after the auction last March that some its features -- such as the requirement for up-front payment, the lack of a price floor, and the limitation to single-year allowances -- are less relevant to market participants. Additionally, although the auction was created to ensure that new, independent entrants had a

place to purchase allowances, few of these types of sources bid in this year's auction; in fact, the auction was dominated by existing Phase II utilities. The results of the 1993 auction indicate that perhaps there is not as great a need to protect the independent sources as was initially expected.

Mr. Chairman, I would like conclude this testimony by pointing out that the Title IV Acid Rain Program incorporates all of the features that EPA finds are prerequisites to successful market-based programs: accountability, enforceability, and meaningful penalties.

I would also like to take a minute to add that in addition to being happy with the market-program, EPA has been very pleased with the relationships that have evolved with utilities, PUCs, and other market participants. I would like to commend all of their efforts and the constructive role they are playing in helping to develop this innovative environmental program.

This concludes my prepared testimony. I will be happy to answer any questions that you may have.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,
WASHINGTON, DC 20460,
February 17, 1994.

Honorable Joseph L. Lieberman,
United States Senate,
Committee on Environment and Public Works,
Washington, DC 20510.

Dear Senator Lieberman. Enclosed are responses to your follow-up questions on the October 21, 1993, Acid Rain hearing before the Subcommittee on Clean Air and Nuclear Regulation. I apologize for the delay, unfortunately the initial request was misdirected upon receipt. I did not receive the questions until the first of the year.

In spite of the delay, I hope that the answers prepared are sufficient for the record. Please do not hesitate to let us know if you require any further information.

Sincerely,

MARY D. NICHOLS,
Assistant Administrator for Air and Radiation.

Enclosures

RESPONSE TO QUESTIONS FROM SENATOR LIEBERMAN

Question. Would you please explain the delay in setting up an allowance tracking system? When is it anticipated that the tracking system will be ready?

Answer. EPA intended for the Allowance Tracking System (ATS) to be operational last June. However, as the system was being developed we learned the complexity of building in the internal controls required to ensure the integrity of a financial system. Since EPA's Acid Rain Division staff do not have auditing and accounting expertise, it took time to learn the requirements of financial systems and to get contractors with such expertise on board. In addition, we experienced, and are still experiencing, significant delays in the contracting process, which in turn delay our ability to complete work on the ATS.

At this point we expect that ATS will be operational by the next allowance auction, which will be held on March 28.

Question. Do you believe that the system you are designing will meet the business needs of those who wish to easily trade allowances and officially record the transactions?

Answer. Yes. When ATS is operational, allowance traders must simply complete a form and send it to EPA, and the trade will be recorded within 5 business days. Eventually, we plan to offer the ability to submit trades to EPA electronically, which will be especially helpful to large utilities which must shift allowances among many units, and to allowance brokers who conduct auctions and have many trades to submit.

Question. Does EPA believe, or have any evidence, that the lack of a tracking system for allowances is impeding allowance transactions?

Answer. According to the utilities we have talked to, transfers of allowances between utilities have been occurring and have not been hindered by the absence of the tracking system. Allowance brokers, however, have told us that they are unable to conduct allowance auctions and cannot complete some transactions until ATS is operational.

Question. Does EPA believe, or have any evidence, that its decision to approve substitution plans for only one year (instead of five) has had a detrimental effect on the allowance system?

Answer. The proposed revisions to the Acid Rain Permits rule does not appear to have had a detrimental effect on the allowance system. The proposed changes affect only a small number of affected units, and may result in modest reductions in the number of allowances for some units. In general, allowance holders are being conservative in their approach to allowance trading at this time. We anticipate that a full trading program will emerge when the ATS system is on line and permit rule changes are finalized.

Question. What is the prognosis for the opt-in program? Does it look like it will attract a meaningful number of participants? Is there anything Congress should do to make it more attractive?

Answer. The opt-in program is a voluntary incentive program that allows non-affected sources (e.g., industrial boilers, small electric utility units, and process sources) the opportunity to enter the Acid Rain Program and receive allowances. Those sources for whom participation makes economic sense will join; potential sources must weigh the permitting, monitoring and regulatory costs of participation against future revenues they might expect from sales of excess allowances. EPA has structured the opt-in program to be consistent with the Act's statutory language and to insure that allowances allocated to opt-in sources do not threaten the 10 million ton annual reduction of SO₂ emissions.

Because entry is voluntary and will enhance the supply of allowances to the utility sector, all participation in the opt-in program will be meaningful, that is, it will result in a reduction of compliance costs as compared to an Acid Rain Program without the opt-in provisions.

Since the regulations establishing the opt-in program are not yet finalized, it would be premature to legislate any additional laws regarding the opt-in program. As the nation seeks to employ economic incentive programs to achieve environmental goals, the Agency believes that adjustments to existing programs might be necessary, but should wait until these programs have had a chance to operate for a few years.

RESPONSE TO QUESTIONS FROM SENATOR BAUCUS

Question 1. All the witnesses testifying at this hearing agree that the failure of EPA to implement an allowance tracking system is hindering the growth of the allowance trading program. In fact, the only allowance sale that has been recorded at EPA was done so by hand at the direction of a high ranking official in the Clinton Administration. I can understand why utilities are reluctant to enter into transactions without the assurance that the tracking system to record allowances will provide. Why has the allowance tracking system not been put into place as yet? (This question is the same as Senator Lieberman's first question.) At this point we expect that ATS will be operational by the next allowance auction, which will be held on March 28.

Question 2. The allowance tracking system planned by EPA is very limited. I understand that it will only track public trades, and only those trades which are required for a utility to meet its annual emissions ceiling? Don't you think this system will be so limited that the market will still be hindered?

Answer. The ATS must necessarily track only public trades, since all information in ATS will be publicly available. Although only transfers which affect allowances a utility wishes to use for compliance are required to be recorded, any other trades that are submitted to EPA will be recorded in ATS. We expect that most allowance trades will be recorded in ATS, since many of the trading community believe that recordation is necessary to complete the allowance transfer.

Question 3. Mr. Shapiro, it is my understanding that EPA is in the process of revising its rules regarding substitution plans. I also know that EPA's rules on such plans were very late in being promulgated, leaving industry little time to comply. Those utilities that did submit 5-year compliance plans are now caught in a bind due to the pending rule change. How do you respond to those in the utility industry who feel that EPA is unfairly changing the rules in the middle of the game . . . particularly those companies that have already submitted plans in reliance on the original rules? Do you think those companies that have already submitted plans are entitled to a break? What level of "excess" allowances would these plans that have already been submitted cause?

Answer. EPA is endeavoring to fulfill the intent of the Clean Air Act which in this case was to allow utilities flexibility to reduce at a Phase II unit in lieu of a Phase I unit. It does not appear that the Act intended for utilities to bring Phase II units which do not need allowances so that neither the Phase II units nor the Phase I units would need to reduce their emissions during Phase I. It should be noted that, under the Act and rule revisions proposed on November 18, 1993, any Phase II unit which made reductions prior to the Act will get credit for those reductions in Phase II. In recognition of changing the rules and possible utility reliance on those rules, EPA has proposed issuing allowances for 1995 under the old rules, whether or not these allowances are needed. The plans already submitted would create 100,000 to 300,000 unneeded, "excess" allowances per year, or 500,000 to 1.5 million allowances during Phase I. These allowances could then be used to emit 500,000 to 1.5 million tons more than we believe is intended by the Act.

Question 4. EPA estimates that even with the so-called excess allowances, 3.7 million tons of reductions will take place during Phase I. Since the estimated Phase I reductions are within the range Congress anticipated, why is it so important to recapture the emissions that EPA now claims are excess? Is the harm caused by interference with the market system which utilities are already skittish to enter into greater than the potential savings in terms of emissions since we are going to make the goal for Phase I?

Answer. To allow the creation of excess allowances would jeopardize a central goal of title IV; the achievement of the 8.95 million annual total tonnage SO₂ cap in Phase II of the Acid Rain Program. Since most of the excess allowances are not needed in Phase I but can be banked and used in the future, "loopholes" allowed now would almost certainly be paid for in the future and manifested in fewer reductions in SO₂ emissions than otherwise would have been achieved. One aim of the Act is for compliance plans to be emissions neutral, i.e., the reductions achieved with a substitution or reduced utilization compliance plan are as least as great as reductions without a plan.

Question 5. We have heard much in this committee from States and other interested groups that EPA has not taken a strong enough leadership role when the goals of the Clean Air Act are clearly being frustrated by a particular special interest. Why hasn't EPA done more to fight these protective statutes that so clearly go against what Congress intended in passing the Act and which drive compliance costs up unnecessarily?

Answer. EPA has consistently stated its opposition to protectionist legislation that interferes with the acid rain allowance market. We will continue to make this case at every opportunity. In conjunction with the Department of Justice, EPA will continue to assess the appropriateness of intervening in particular lawsuits involving particular statutes, taking account of such factors as the implications of the proceeding on the Commerce Clause and Federalism, the litigation resources of the two Agencies, and the programmatic impacts of the purportedly offensive statute.

Question 6. The CAA required EPA to promulgate the final NO_x rules for dry bottom wall fired boilers and tangentially fired boilers by May 15, 1992. The statute required utilities to comply by January 1, 1995, which would have allowed industry 31 months to comply. Given the substantial lead time needed to order and fabricate equipment, and schedule installation at a time when the boiler can be off-line for a month or more, utilities have great concern of meeting shortened deadlines.

The rule is already 16 months late. I understand that as recently as last week the Acid Rain Division was still asking utilities for more data, further delaying the final rule. When can we expect promulgation of a final rule? Will additional time to comply be given to the utilities to compensate for EPA's long delay in finalizing the rule?

Answer. The Agency is under a court ordered deadline to finalize the NO_x regulations by February 28, 1994. The Agency expects to meet this deadline, and no extension will be given to the utilities to comply with this rule since the limits for Phase I, Group I boilers that EPA is requiring are the same presumptive limits that were set in the CAA.

Question 7. An early election provision is included in the proposed NO_x rules to encourage early voluntary compliance by utilities with Phase II units and to try to avoid a severe bottleneck in the installation of NO_x reduction technology in the late 1990s. The program has merits for everyone, but decision await promulgation of NO_x rules, specifically to preclude "blind" decisions. Utilities have relied on the early election program in the proposed rule for the purposes of compliance planning. Some analysts believe that Phase II of the NO_x control program will have to extend beyond the year 2000 without an early election program. What are your views on encouraging utilities to comply with the NO_x rules early through an early election program? Secondly, "does early election by a Phase II unit commit it to the reporting requirements of proposed 76.17(f)—Reporting of the costs of low NO_x burner technology applied to Group I, Phase I boilers?"

Answer. EPA proposed an early election program in the proposed rule and is still evaluating the merits and design for an early election program for the final regulations. Early election units would be subject to the same reporting requirements as Phase I units under proposed 76.17(f).

Question 8. EPA's proposed alternative emission limit rule for NO_x would require many owners and operators of utility boilers to insure that their coal pulverizers meet the original manufacturer's design equipment specifications for fineness when new. These specifications become progressively difficult to meet as equipment ages,

especially for utilities that wish to meet acid rain requirements by switching to low sulfur coal which is hard to grind. Whether this pulverizer requirement smacks of an anti-low sulfur coal move is beside the point. However, this could result in some utilities either replacing expensive pulverizers (increasing the cost of low NO_x burner retrofits several fold! or deciding not to use low sulfur coals. EPA does need to recognize that coal mill fineness changes slowly over time, and to continuously bring pulverizers to "like-new" will be difficult and very costly. The CAS states that operators "shall not be required to install anything beyond low NO_x burners. Will the final NO_x rules require utilities to meet aggressive coal fineness standards, thereby requiring the purchase of expensive new pulverizers? Is there a range of particle sizes that could form a fineness standard that will not detract from the most efficient operation of low NO_x burners?

Answer. EPA's regulations require that utilities make diligent efforts to meet the statutory emissions performance standard. We acknowledge your comments and have received these and various others on the proposed rule. EPA is considering the issues raised as it goes forward with the final NO_x rule promulgation.

WRITTEN TESTIMONY OF DAVID D. PHELPS

ILLINOIS STATE REPRESENTATIVE -118TH REPRESENTATIVE DISTRICT

BEFORE THE UNITED STATES SENATE SUBCOMMITTEE ON CLEAN AIR

AND NUCLEAR REGULATION

OCTOBER 21, 1993

As a State Representative from a coal producing district in Southern Illinois, I have already witnessed firsthand the impact of the Clean Air Act Amendments of 1990 (the "CAAA"). Without a doubt, this law presents the coal mining industry in Illinois with the greatest challenge it will ever face; survival. Coal production has traditionally been a consistent contributor to the Illinois economy. However, since the CAAA identified sulfur dioxide as a precursor to acid rain, and mandated that SO_2 levels be reduced, the Illinois coal mining industry's existence is threatened. Major sources of sulfur dioxide emissions are utilities which burn high-sulfur coal to produce energy. Nearly all of Illinois coal is high-sulfur. Thus, the entire market for Illinois coal is at risk.

To address this threat, the 87th Illinois General Assembly worked on CAAA response legislation throughout the 1991 Spring Session. After literally months of negotiations involving all affected entities, and multiple amendments to various pieces of legislation, the result was Illinois Senate Bill 629. SB 629 also became known as the "Coal Bill"; it passed both houses of the General Assembly on July 18, 1991, and was signed into law by Governor Jim Edgar as Public Act 87-173 on August 27, 1991. I have provided the Subcommittee with a copy of PA 87-173, as well as an analysis of its provisions. SB 629 will hereinafter be referenced as PA 87-173.

One of the key provisions of PA 87-173 was a mandate for two public utilities - Illinois Power Company and Commonwealth Edison - to install pollution control devices. The language was constructed to insure that the mandate only apply to Illinois Power's Baldwin, Illinois plant located near St. Louis, and Commonwealth Edison's Kincaid plant located in Central Illinois. While there was seemingly a consensus during the negotiation process that the mandate applied to Phase I installation of flue gas desulfurization units ("scrubbers"), there was no formal Phase I installation deadline contained in PA 87-173.

Because of this, both Illinois Power and Commonwealth Edison have delayed the installation of any pollution control technology at their affected stations.

I do not want to dwell on the issue of these two public utilities's compliance with PA 87-173, mainly because a lawsuit is pending on the matter. I will say that it was the belief and intent of the Illinois General Assembly that in passing PA 87-173, both Commonwealth Edison and Illinois Power would be required to install two scrubbers each at their Kincaid and Baldwin plants, respectively, to comply with Phase I of the CAAA. This will not be the case. Further commentary on why each utility will not be doing so is contained in the supplemental documents I have provided to the Subcommittee.

At this point, I would like to comment briefly on another important part of PA 87-173, which involved a \$35 million State grant. The grant was to be made available to Illinois Power for use in constructing the Baldwin scrubber. In addition, and perhaps more importantly, at the time the bill was being negotiated, Illinois Power's Baldwin facility was being considered as a possible host site for a United States Department of Energy Clean Coal Technology demonstration project; a state-of-the-art scrubber. Many were led to believe that if the state promised to contribute at least some of the cost for the very expensive scrubber unit, then such a commitment would probably be enough to give Baldwin the edge in winning the demonstration project.

Unfortunately, Illinois Power was not awarded the demonstration project. Moreover, construction on a conventional scrubber at the Baldwin facility was halted in the Spring of 1992, after the utility had already expended \$25 million. Illinois Power reconsidered Phase I scrubber construction, and rejected the State of Illinois's \$35 million grant offer made October 1, 1992. Meanwhile, Illinois Power's management publicly declared that they were reassessing all available Phase I compliance options. Low-sulfur coal, allowance purchases, and even natural gas repowering were all mentioned as possibilities.

Months passed. Eventually, in March of this year, Illinois Power announced that it would meet Phase I compliance requirements through a combination of low-sulfur Illinois coal purchases, coupled with SO₂ allowance purchases from another Illinois public utility, Central Illinois Public Service. Any "technological solution" - possibly, though not

necessarily, a scrubber - will be delayed until Phase II.

Illinois Power's Phase I compliance strategy was the first to declare a large-scale, ongoing reliance on allowances. I do not believe Illinois Power will be the last to declare such a reliance on this new market-based approach to controlling SO₂ emissions. For this reason, I assisted in drafting a bill for the 1992 Spring Session of the Illinois General Assembly to establish an intrastate allowance tracking system, administered by the Illinois Commerce Commission. Senate Bill 2057 was signed into law by Governor Edgar on September 16, 1992, as Public Act 87-1133.

The intent behind PA 87-1133 was to fill a policy void in the federal regulations regarding allowances. While the United States Environmental Protection Agency (USEPA) proposed a series of Allowance Tracking System (ATS) accounts and subaccounts to hold and monitor the allowances, the USEPA regulations required allowance transactions to be reported only once. In extreme circumstances, such reporting could take place over one year after the de facto allowance transaction. We felt this delay was unnecessary. Furthermore, the availability of ATS account information, while required by law, seemed questionable.

PA 87-1133 introduced a missing element of certainty. The law requires the Illinois Commerce Commission to collect SO₂ allowance holdings data from affected public utilities. This information is required to include the number of allowances a utility is allocated, by statute or otherwise, and also the number of allowances a utility purchases or sells.

It should be noted that PA 87-1133 does not require disclosure of financial terms related to the sale or purchase of allowances. Likewise, PA 87-1133 does not attempt to set policy related to the prudence of allowance transactions. The law simply requires the ICC to establish a quarterly reporting schedule for collecting allowance information, and mandates that this data be included in the ICC's annual report to the General Assembly. A quarterly format should provide a more accurate view as to the ebb and flow of allowance transactions than an annual format. Moreover, it will demonstrate who the buyers and sellers are, and insure that allowance transactions are being tracked in a

timely fashion.

The letter I received from the Subcommittee contained several rather specific questions. I would like to go through those questions individually and provide my thoughts on them. Frankly, most of the questions involving the allowance market are premature; the system is still in its infancy, and compliance requirements are still months away. But I will do my best to provide some insight where possible. To avoid being redundant, I will not repeat each question. Rather, I will use the same format as the Subcommittee's letter, highlighting each of my responses with an asterisk ("**").

- * Utility Clean Air Act compliance decisions are primarily made to meet the short-term prudence standards of the respective state Public Service Commissions (PSC). Often, these decisions are not the least-cost choice for the long term. In some cases, a utility may have spent enormous resources to develop a compliance strategy, only to have it challenged by the PSC. Fuel cost assumptions and allowance utilization strategies present problems. As a consequence, Illinois utilities are unwilling to make a strong commitment towards any one strategy. None seem willing to commit to any type of large capital improvements to meet new CAAA standards.

By not coordinating the anticipated controls on hazardous air pollutants and carbon dioxide with the sulfur dioxide regulations, public utilities face a quandary. Control of sulfur dioxide may require one technology while control of these other pollutants may require another. Unfortunately, PSCs do not allow utilities to include costs of anticipated regulations in their capital planning. By not allowing an adequate time span for compliance, and by not coordinating the development and implementation of these other regulations, a least-cost strategy will be exceedingly difficult to achieve.

The allowance trading system is, at best, unpredictable at this time. While the first auctions set an initial price range for allowance trading, it is important to note that no privately held allowances were traded at the first auction. There is a relatively wide gap in perceived value between the buyers and sellers of allowances. One obstacle to trading may be that utilities prefer to bank allowances rather than sell. In the near future, PSC policies are likely to be developed that will govern how utilities handle their allowances. These policies may undermine free trading of allowances if utilities are challenged by the PSCs on the basis of their allowance strategies.

For example, some state PSCs are questioning the prudence of banking Phase I allowances for Phase II compliance. The challenge involves whether or not the benefits of the allowances ought not be distributed to the consumers earlier. If this type of challenge becomes widespread, the entire concept of the allowances will come into question. Moreover, each state may institute a different prudence standard for allowances - theoretically 50 standards - and this development could also greatly inhibit allowance trading.

Compliance with the mandated SO_2 reductions is largely being achieved in the Illinois coal market area (which includes 11 states) through fuel-switching to low-sulfur coals. While this will produce a net decrease in sulfur dioxide emissions, it may produce some undesirable environmental effects. For instance, roughly 50 percent more Powder River Basin coal must be burned to produce the same heat value as Illinois coal. Corresponding increases in the generation of carbon dioxide, hazardous air pollutants, and solid wastes are likely to result. While we have reduced one pollutant, we may be inadvertently increasing the production of other pollutants, which may in turn be facing federal regulation in the near future.

Furthermore, one Illinois utility plans to offset its decreased coal generating capacity with a corresponding increase in its nuclear generation. Considering the long term commitment and dangers of radioactive waste disposal and storage, it is an open question whether displacing coal generation with nuclear generation is environmentally preferable.

- In Illinois, clean coal technologies (CCTs) are believed to be the salvation of the Illinois coal industry. Regrettably, there are several factors that are limiting the implementation of CCTs in Illinois. First, Illinois has received no Round III, Round IV, or Round V CCT demonstration projects. Second, one of the principal conservation measures - demand-side management - is effectively delaying the deployment of efficient CCTs. New capacity needs are being offset by demand-side management practices. Third, plant life extension - "plant betterment" - is also delaying the deployment of CCTs by extending the useful life of existing plants. Rather than replace obsolete plants with next generation technologies, utilities now extend the life of outdated technologies.
- Because I was not a member of the Acid Rain Advisory Committee (ARAC), I cannot judge the merits of that group structure. Generally speaking, I believe committee arrangements of this type are consistent with sound public policy development, especially with the ever-increasing technical and technological nature of pollution control initiatives.

I would make one observation concerning time constraints. Due to the complex nature of CAAA regulations, there appeared to be insufficient time allotted for the development and implementation of the new regulations. In some cases, regulations are being issued as the regulatory deadline approaches. This leaves utilities in the precarious position of having to predict what form a given regulation may take. Surely, it was not the

intent of Congress for these decisions to be made in haste. Utilities must be given sufficient time to weigh multiple options and implement appropriate compliance actions where brand new regulations are concerned.

* A regulatory expert would be in a better position than a state legislator to answer this question. I can say that to date, Illinois has not had a benchmark ruling from the ICC that I am aware of regarding cost and benefit distribution among ratepayers and shareholders. The standard is elusive. A more concrete standard is the least-cost requirement. One school of thought holds that the least-cost standard will be the most consistently adhered to, particularly as it applies in the short term.

I would add to this several questions which have arisen:

- Do States have the right to mandate pollution control strategies?
- Can States mandate in-state coal use? (There has already been some judicial treatment of this question. More can be anticipated.)
- How should the sale of allowances be treated?
- Who profits from the generation of excess allowances?
- Who assumes the risk of an allowance strategy?
- Will environmental externality policies have an effect on new capacity choices?

* Perhaps the single biggest lesson to be learned is that clean air policy is not something to be approached incrementally. As a legislator, I am probably more sensitive than most when it comes to the prevailing political winds, and the resulting need to take action. Nonetheless, environmental policy necessitates a broad perspective, and a comprehensive approach. Sulfur dioxide emission limits are currently known. But what about

imminent hazardous air pollutant standards? And what of rumored carbon dioxide emissions limits? If the federal government values clean air, which we all do, then it must be willing to state an overall goal, and institute a balanced, comprehensive policy involving the entire spectrum of air pollutants. The danger lies in a fragmented policy which continually identifies new clean air chemical bandits, and subsequently issues "new and improved" pollution control mandates. Utilities do not make their decisions in a vacuum. They must know the totality of what they face so that they can make long term decisions in the best interests of us all.

MARY B. GUTHRIE, DEPUTY ATTORNEY GENERAL
STATE OF WYOMING

Thank you, Mr. Chairman, distinguished members of the subcommittee and guests. The State of Wyoming appreciates this opportunity to discuss protectionist coal legislation. We have a special interest in this area, because two years ago the State of Wyoming successfully challenged an Oklahoma statute that required coal-fired generating plants to burn a mixture that included at least 10% Oklahoma coal. In Wyoming v. Oklahoma, the United States Supreme Court held that Oklahoma's statute was unconstitutional because it "expressly reserved a segment of the Oklahoma coal market for Oklahoma-mined coal to the exclusion of coal mined in other states." 502 U.S. ____, 117 L.Ed 2d 1, 23 (1992).

Laws enacted in several midwestern states are of great concern to states, like Wyoming, in which low sulfur coal is produced. While these laws were passed under the guise of complying with the Clean Air Act Amendments of 1990, they directly affect the interstate sale of coal by fencing out coal produced in other states. The effect of the legislation is that consumers will be required to pay more and the national market for coal will be disrupted. These laws also will have a great impact on western states' fuel producers, western states' economies and on the coal allowance trading system.

Coal is an extremely important commodity in the highly competitive national energy market.¹ While coal is produced in more than half the states, it varies greatly in sulfur content, depending on geographical origin. Western subbituminous coal generally has a much lower sulfur content than eastern bituminous coals.

The Clean Air Act has included several strategies to deal with air pollution since its enactment. However, the approach to regulation changed dramatically in 1990 with the enactment of Title IV of the Clean Air Act Amendments of 1990 (the CAAA). Title IV of the CAAA was intended to permit utilities to develop cost-effective compliance plans, based on their individual economic circumstances. Because utilities were not mandated to install expensive scrubbers, the most desirable and economical way to comply with emission standards would in many instances be a switch from high sulfur coals to low sulfur coals.²

After passage of the CAAA, the states of Illinois, Indiana,

¹ In 1992, the coal mines in Wyoming produced 189,500,000 tons of coal, making Wyoming the nation's leader in coal production for the fifth straight year. Moore, Coal Update, Wyoming Geonotes-no. 39, 1993, p. 18. Wyoming sells nearly all of its coal to electric utilities in other states. In 1992, it exported 86% of its coal to twenty-three states. Id.

² It has been estimated that in response to the CAAA, sales of low sulfur coal from the Powder River Basin of Wyoming will be increased by 31 million tons by 2010. *Federal Government Projections, Annual Energy Outlook, 1993, with Projections to 2010*, (DOE/EIA-D383(93)). Obviously, this figure will be significantly reduced if midwestern legislation preferring local coal is validated.

Ohio and Pennsylvania passed legislation to assure the continued use of their own states' high sulfur coal.³ An examination of the Illinois Act ("the Act") will illustrate the protectionist nature of these laws. 220 ILCS sec. 5/8-402, et seq.

The Act's parochial tone is clearly established in its preamble, with the legislative finding that the public welfare requires utilities and the Illinois Commerce Commission ("the ICC") to consider "the need to use coal mined in Illinois and the need to preserve the mining of coal in Illinois as a valuable state resource." ILCS Sec. 5/8-402.1.(a). The Act guarantees the Illinois coal industry that it will be able to continue to sell coal to two of the largest coal-fired power plants in Illinois by directing the utilities to install scrubbers. In addition, not only does the Act bar the utilities from purchasing low sulfur western coal, it appears to ban coal from other midwestern states, because the utilities were required to continue to burn Illinois coal.

Other aspects of the Act also exemplify the Illinois legislature's efforts to prefer local coal markets. Illinois utilities must file a Clean Air Act compliance plan with the ICC, if the use of Illinois coal would be decreased by 10%. ILCS Sec. 8-508. In reviewing and approving compliance plans, the ICC must recognize "the need to maintain and preserve as a valuable state

³ As a consequence of the enactment of the CAAA, Illinois coal is not as appealing to utilities as a fuel source. Less than 10% of the Illinois coal reserves have a sulfur content that would meet emission standards effective in 1995 and none can meet the limits for the year 2000.

resource the mining of coal in Illinois." It is clear that compliance plans which would expose the Illinois coal mining industry to out-of-state competition stand less of a chance of approval than plans that would insulate it from competition.

Three compliance plans have already been approved by the ICC. In each case, the continued use of Illinois coal was selected over switching to out-of-state coal, even when it was not in the best economic interest of the utility or its rate payers to do so. In its compliance plan, Commonwealth Edison clearly stated that the least expensive method would be the use of western low sulfur coal. However, the company recognized that state law prohibited fuel switching.

Of great significance to this Subcommittee is how the Illinois Act and discriminatory laws from other midwestern states interfere with Congressional objectives. The CAAA was passed so that utilities could find the cheapest and most effective way to reduce sulfur dioxide emissions. Legislative history shows a clear intent of Congress that sulphur dioxide reductions were to be achieved by the most economically efficient means:

The reduction programs established by Title IV maximize the range of choices [utilities] have for complying with their emissions limitation requirements. . . Through this flexibility Title IV minimizes the costs and maximizes flexibility and efficiency. EPA estimates that this added flexibility could reduce the total costs of the program by at least 20%.

Report of Committee on Environment and Public Works of the U.S. Senate, at 303 (to accompany S. 1630) (December 20, 1989).

By limiting the ability of Illinois utilities to purchase low

sulfur coal as a part of a compliance strategy under Title IV, the Illinois Act stands in direct contravention to the purposes of the comprehensive acid rain control program. By mandating that two of the largest utilities install scrubbers to burn Illinois coal and discouraging fuel switching, without considering the cost or efficacy of such an approach, the State of Illinois has circumvented Congressional objectives and policies. Quite simply, the Illinois Act directly interferes with the ability of Illinois utilities to choose the best way to comply with Title IV.

The CAAA reflects the view that individual utilities and not government entities should decide how to comply with Title IV. Recognition that the market place and not the political arena should govern fuel choice decisions is evidenced by the fact that a provision in the House version of the CAAA that would have allowed the governor of a state to require the purchase of local coal was rejected by the conference committee.

As you well know, several compromises were made to assure passage of CAAA. Because of the concern that the CAAA would affect the sale of high sulfur coal, midwestern utilities were given extra emission allowances. Now those same midwestern states are undercutting the purpose of the CAAA by requiring the use of coal mined in their states.

Efforts to assure that the coal mining industry remains viable are not unique to Illinois. Statutes enacted in Ohio, Indiana and Pennsylvania have the same practical effect of protecting local coal. See, e.g. Baldwin's Ohio Revised Code Ann. §4913.04; 1991

S 143, §8, eff. 7-10-91 (uncodified law). Baldwin's Ohio Revised Code Ann. §5727.391. Burn's Indiana Statutes Ann. § 8-1-27-6(b)(6)(A)(i) and (ii); 66 Pa. Cons. Stat. Ann. §530. Other states have also enacted laws that discourage the use of out-of-state coal.

All of these parochial laws operate to the detriment of all consumers of electricity, including industries, taxpayers, low sulfur coal producers, railroads that transport coal, and the states in which low sulfur coal is mined. If midwestern states can require the burning of local coal over the cheaper alternatives of low sulfur coal, there will be a significant flow-through effect on several aspects of the economy. These states should not be permitted to erect barriers to interstate commerce by passing legislation that interferes with the market place. They should not be allowed to obstruct and dilute the express purposes of the Clear Air Act Amendments of 1990.

Congress must address the problems created by these discriminatory laws. Two years ago at this time I was in Washington to argue the case of Wyoming v. Oklahoma. Apparently, even a decision from the U.S. Supreme Court invalidating a statute that preferred Oklahoma coal over out-of-state coal has not deterred other states from interfering with the national coal market.

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR REGULATION

HEARING

OCTOBER 21, 1993

IMPLEMENTATION OF THE ACID RAIN PROVISIONS OF TITLE IV

WRITTEN STATEMENT OF

RICHARD ABDOO

CHIEF EXECUTIVE OFFICER AND CHAIRMAN OF THE BOARD
WISCONSIN ELECTRIC POWER COMPANY

On behalf of Wisconsin Electric Power Company, which provides electric utility service in southeast and east-central Wisconsin and portions of Michigan's Upper Peninsula, I thank you for the opportunity to provide this statement regarding implementation of the acid rain provisions of Title IV, Clean Air Act Amendments of 1990. My written comments address the issues outlined in the October 6, 1993, invitation to provide testimony received from Senators Lieberman and Simpson.

Wisconsin Electric supports the concept and implementation of the free market approach to environmental emissions reduction embodied in Title IV. In fact, we have already entered into agreements regarding four major future SO₂ allowance trades. As environmental legislation and implementing regulations have been adopted over the past 20 years, regulators traditionally relied on the command and control approach to attain the necessary levels of emissions reduction. This approach imposed the same level of control on all affected sources (of the same type) without recognizing the differences in compliance costs between individual sources. For example, one source may have been able to overcomply at a cost lower than that incurred by another source to barely achieve compliance levels. The application of market-based compliance strategies, which recognize compliance cost differentials will result in lower costs to achieve equivalent environmental benefits. Congress recognized this in adopting the Clean Air Act Amendments of 1990, seeking to promote the use of a more cost effective means to achieve emissions reduction.

The market-based approach adopted by Congress as the means to achieve sulfur dioxide (SO₂) emission reductions from utility generating units across the country is working. The market-based approach was designed to take advantage of compliance cost savings available through both intra-system emissions averaging among units owned by a utility, and inter-utility trades of SO₂ allowances. Recent estimates of projected savings for electric utilities and their customers range from \$ 1.7 - 2.3 billion annually.¹ I'm pleased to report that this new and

¹ EPRI Report TR-102510, August 1993. "Integrated Analysis of Fuel, Technology and Emission Allowance Market: Electric Utility Response to the Clean Air Act Amendments of 1990"; page xi.

innovative approach to emissions reduction is indeed taking hold and should reduce compliance costs while achieving the important emission reduction goals established by Congress.

Evidence of increased interest in and utilization of the market approach can be seen in the number of marketing agents, electronic bulletin boards and other methods available to utility compliance planners seeking to trade allowances, even during this initial Phase I compliance planning period. Consider that somewhere between one and two dozen allowance trades occurred during 1992, a full three years before the start of Phase I. As we speak today, utility planners are seeking to integrate allowance trading into their decisions for complying with not only Phase I, but also Phase II reduction requirements. This is sufficient evidence to speak to the emerging vitality of the allowance trading system, and the underlying free-market system of emissions reduction.

Phase I SO₂ emission reduction programs are underway through a combination of switching to lower sulfur fuels, installation of flue gas desulfurization devices, and allowance trading. Current estimates suggest about 14 gigawatts (GW) of installed electric capacity will be retrofitted with scrubbers by 1997, resulting in about 1.7 MTPY of SO₂ emissions reduction during Phase I.² About 45 - 50 GW of capacity is in the process of switching to lower sulfur fuels, contributing to an additional 2.7 MTPY of reductions.²

While inter-utility allowance trading has not yet assumed a major role for achieving required emission reductions, it is being used more frequently. Utility planners are seeking information from other utilities and allowance marketing agents on the cost and availability of allowances, and using that information in crafting compliance plans. Aggressive, forward looking utilities are going one step further by consummating trades which benefit their customers and the environment.

However, there are some obstacles which stand in the way of more effective utilization of the free market approach to emissions reduction. Overcoming these obstacles will allow utilities and their customers to realize more cost savings, and ultimately, more completely achieve the goals of Congress. Those obstacles include: regulatory uncertainty, allowance price uncertainty, the media's characterization of emissions trading and unfamiliarity with market-based emission reduction programs.

² EPRI Report TR-102510, August 1993. "Integrated Analysis of Fuel, Technology and Emission Allowance Market: Electric Utility Response to the Clean Air Act Amendments of 1990"; pages 1-5 (scrubbers) and 1-6 (fuel switching).

REGULATORY UNCERTAINTY

Despite the innovative, participatory, and largely successful ARAC rulemaking process, there are still significant regulatory uncertainties. These have acted to slow the use of allowance trading and will reduce the economic flexibility Congress built into the Act.

Recently, EPA announced that it would only approve compliance plans based on substitution and/or compensating units for the first year of the five-year Phase I period. At that time, EPA also indicated its intention to propose revisions to the recently issued final rules. The specifics of this proposed revised rulemaking are best left to another forum. However, the very act of proposing to revise final rules less than six months after their promulgation creates uncertainty among utility planners who need to know the criteria for developing compliance plans. Above all, utilities need a regulatory environment which provides a reliable basis for their long-range compliance planning efforts. Allowance trading has been hampered by these actions, as evidenced by discussions between my staff and other utilities, and in the relatively few number of trades which have occurred in the interim.

Other regulatory uncertainty adversely affecting the allowance market results from EPA's delays in issuing the Allowance Tracking System (ATS). This system, which is designed to keep track of allowance ownership by recording allowance transfers, is the backbone for the free market trading of allowances. Sadly, because of this delay, only one trade actually has been recorded by EPA, and that through rather extraordinary measures. Issuance of an effective ATS system would stimulate allowance trading.

Finally, another aspect of regulatory uncertainty which is an obstacle to market development results from actions taken by some state legislators and regulatory agencies directed towards the market. For example, actions to date have taken the form of mandates from Illinois state legislators on requiring the use of in-state coal resources, and proposed legislation restricting free interstate allowance trading in New York. Some PUCs have also added significantly to uncertainty, in areas such as cost recovery for equipment necessary to achieve compliance, disposition of revenues associated with allowance sales, allocation and recovery of costs associated with purchases, and finally, retrospective prudence reviews of utility compliance plans. While these and related issues need to be addressed and agreed upon by utilities and their regulators, this should happen in a manner which is supportive of market development.

Utilities need to move forward with implementing cost effective compliance plans and associated allowance trading plans without excessive controls placed on the free market at the state level.

PRICE UNCERTAINTY

Another obstacle to development of the market is the issue of allowance price, or value uncertainty. No mechanism exists today to allow buyers and sellers to review commercial aspects of recent trades, or evaluate indicators of allowance value. Various firms have attempted to publish their estimates of current allowance values and predictions of future trends. These predictions are of some value, but do not reflect actual conditions at the time of a trade. The only real indicator of market value is the price of allowances currently traded, based on actual contracts. For trades which have occurred, terms and conditions for even such important aspects as timing, quantity of allowances traded, and price have not been made public in a significant number of instances. We view this reluctance to release trade information as evidence of concern by utilities of state PUC findings that their trades may not have been advantageous for their customers. This becomes a vicious circle-without price information related to trades which have occurred, more utilities are unwilling to release information which they perceive might be damaging to them in PUC proceedings.

We ask that Congress support the development of several market exchange alternatives. For example, the Chicago Board of Trade is working on both private auction and futures market initiatives, the New York Mercantile Exchange is considering a futures market, and Cantor Fitzgerald is working on an allowance brokerage service.

We have also recognized that release of basic terms and conditions of trades sends important price signals to prospective buyers and sellers, and are now encouraging the release of such information. We urge other allowance trading partners to share market information as soon as practicable after trades occur. We're also confident that as this market matures, other means of publishing allowance market price terms will develop.

MEDIA CHARACTERIZATION OF EMISSIONS TRADING

One can well imagine the reaction of utility executives to the media outcry over the first and even more recent allowance trades. Headlines such as "Selling Pollution Rights," "Utility is Selling Right to Pollute," and "Trading Pollution Credits Not Sound Public Policy" do nothing to encourage utility executives to use allowance trading as a compliance tool. The characterization by the media of allowance trading has impeded trading. Wisconsin Electric, other utilities, and EPA staff have all worked to educate the public as to the reason for and goals of allowance trading.

Since allowance trading is designed to achieve the required level of emissions reduction in the most cost effective manner, we believe the problem is one of awareness and education, rather than an underlying philosophical opposition to the concept. Accordingly, we urge federal and state officials to be more proactive in promoting the advantages of allowance trading.

NEW APPROACHES

The final obstacle to effective use of allowance trading may be caused by utilities' unfamiliarity with this approach to emissions reduction. Traditionally, planning engineers have addressed compliance under "command and control" techniques by comparing emission limits with current emissions and then selecting the most cost-effective technology available for individual units to achieve emission reductions. This historic approach was relatively straightforward, and required little in the way of assessing other alternatives, since under the command and control approach, few alternatives were typically available. The command and control approach did little if anything to stimulate innovative control technology development. In contrast, the market-based approach creates overcontrol incentives for increased technological advancement.

We've noted that some utilities are still only considering their own plants in their planning efforts, and may be banking excess SO₂ reductions for later use, rather than selling the excess on the market. Utility planners need to fully integrate market opportunities into their planning to realize the full cost savings potential. Much of this hesitation in using the market is caused by concerns over deliverability of the purchased allowances. This is often viewed as taking on more risk than achieving compliance on a single system basis.

We believe that the utility industry is on a learning curve with respect to the application of the market based approach for emission reduction. More time and familiarity will yield greater use and reliance on the market, hence greater cost savings.

None of the obstacles discussed above are by themselves sufficient to seriously damage the potential for market development. However, together they have slowed acceptance and use of the new program. While we've presented ideas on how to overcome those obstacles, Congress needs to provide some level of reassurance about the importance of and national commitment to the free-market based approach. This effort should also include initiatives to promote the advantages of this emission reduction approach relative to command and control.

Further improvements would be realized by an acceleration of EPA rulemaking activities on the Allowance Tracking System.

Planning certainty and confidence in the market would also be enhanced if rules are allowed to remain in effect without change for a reasonable period of time after they are issued. If EPA moves forward with their plans to revise the substitution and compensating unit rules, we urge that the process of revision be made in the same successful manner as rule development on this program has previously been done; through negotiated rulemaking.

Utilities must also do their part to remove obstacles. We need to share trade information more readily to illustrate to non-trading utilities

that the market does work and that allowances are trading for realistic prices. Utility planners must move beyond compliance planning on an individual system basis, and must incorporate inter-system compliance alternatives, using allowance trading in their analyses.

I'm confident that with these and other improvements in the process, allowance trading will become more thoroughly incorporated into utility planning and will achieve the goals set forth by Congress.

It appears that emission reductions beyond those required to achieve Phase I SO₂ goals may be achieved. Utilities such as Wisconsin Electric realized during the mid 1980's that relatively abundant and economical sources of low sulfur coal were available and could, with relatively modest plant equipment retrofits, be used in existing boilers designed for high sulfur coal. We note that a significant number of utilities are switching to coal with lower sulfur content than necessary to comply with Phase I.

Phase I allowance allocations were based, in part, on an assumed SO₂ emission rate of 2.5 lb/MBtu; therefore, to comply, utilities would have to make a switch to coal with a sulfur content no greater than 2.5 lb/MBtu. However, we note many utilities are switching to coals yielding emission rates of 1.0-1.5 lb/MBtu. These reductions are beyond those required by Phase I, resulting in earlier reductions than anticipated. We understand that additional reductions beyond those required are also being achieved through the scrubbing of more capacity than required.

Additional reductions may be achieved by substituting Phase II units into the Phase I program. However, due to the uncertainty resulting from recent and pending proposed EPA action on those Phase I permit applications that include substitution plans, many of the potential substitute units may not be brought into Phase I.

Congress also included pollution prevention tools for utilities to use in developing and achieving plans to reduce SO₂ emissions. These tools include bonus allowances available from the Energy Conservation and Renewable Energy Reserve, special considerations given to clean emitting alternative technologies, and other forms of pollution prevention.

Utilities are considering these important tools in their Title IV compliance planning efforts. A number of utilities, including Wisconsin Electric, have already applied for bonus allowances available under the Energy Conservation and Renewable Energy Bonus reserve for energy savings achieved through various demand side management programs. More utilities will be using these important tools throughout Phase I and into Phase II. Avoidance of emissions through more efficient use of energy is often a practical and cost effective approach in addressing Title IV emission reduction requirements.

EPA employed an innovative approach for developing some of the rules needed to implement Title IV acid rain provisions. An Acid Rain

Advisory Committee (ARAC) was established by EPA to help in identifying options and determining potential solutions to address many of the important issues associated with acid rain rule development. We believe that effort was of significant value to the overall process of developing workable regulations.

Wisconsin Electric actively participated in the ARAC. I chaired the Permits and Technology Subcommittee, and others in the company worked closely with EPA staff in areas such as continuous emission monitoring. We have a positive feeling about our involvement and the regulations which were ultimately developed. The approach of working together to achieve regulations acceptable to the regulated community, the regulators, and other interested parties is essential as we strive to improve our environment in a responsible, cost-effective manner. We must work together to achieve our common goals. With multiple party input, the potential for litigation is substantially reduced, thus allowing for more rapid realization of environmental benefits.

We strongly urge Congress and the EPA to use this effective approach for future rule development. In areas of Title IV where it was not utilized to the extent necessary, such as NOx rules and opt-in rules, final regulations have not yet been issued, and comments received on proposed rules have generally been more extensive, and in some cases, contentious.

With enactment of such far reaching legislation as Title IV, and implementing regulations, various state regulators and legislators have become involved in state specific issues. While I can't possibly address all of the issues being discussed, I can share with you some issues being discussed in Wisconsin and neighboring states. Some of these issues were previously cited in my remarks regarding obstacles to more effective utilization of the free market system. Our common goal is to achieve the level of emissions reduction necessary to reduce acid deposition significantly across the country at the lowest cost possible. State related issues may at times make it more difficult to achieve this national goal.

The first area of concern deals with accounting and ratemaking issues surrounding compliance expenditures and allowance transactions. Earlier this year, the Federal Energy Regulatory Commission (FERC) issued allowance transaction accounting guidelines (FERC Order 552). We believe that states should adopt those guidelines to maintain a level of consistency in dealing with important accounting issues. We also urge consistent and equitable rate treatment for capital expenditures associated with pollution control equipment necessary to meet emission reduction requirements of the Act. Prudent expenditures should be promptly approved and recognized in the ratemaking process.

Another general area of concern involves efforts taken or threatened by several states, which would make it more costly to achieve national SO2 emission reduction goals. Those efforts include, but are not limited to, requiring the use of in-state coal resources and placing constraints

on utility allowance trading. Requiring the use of in-state coal forces utilities to select potentially non-optimum compliance approaches, at higher costs to their customers.

Burdensome trading constraints imposed on the state or even regional level, such as dictating potential trading partners by geographical location, can effectively prevent groups of utilities from trading in a cost-effective manner and consequently adversely impact the national market. Elimination of even several utilities from the list of potential trading partners could have an adverse impact on utility trading across the entire country, and should be discouraged. At this point in the development of the allowance market, every effort needs to be made to encourage utilities to trade freely across state lines. The goal of achieving national reductions in utility SO₂ emissions in a cost-effective manner is not served by adding state specific controls. There already exist a number of other Clean Air Act programs which address state and local air quality concerns, such as the ambient air quality standards designed to protect public health and welfare.

In summary, the market based approach, as enacted by Congress is a cost effective tool that utilities are using and which can achieve ambitious SO₂ emission reductions across the country. This approach is still in its infancy, and there are serious obstacles which may threaten its effectiveness. We are confident that the approach is legitimate, and makes sense for our country, as we seek to achieve environmental objectives in concert with providing jobs, strengthening our national economy, and competing overseas. We expect that, provided the obstacles I have identified are dealt with in a responsible manner, the full benefits of the market-based approach will be realized over the next 3-5 years.

I also believe that the market-based approach is the way to achieve future environmental goals in a number of other areas. This approach has harnessed the combined creativity of engineering, science and business staff of utilities and regulators alike in a way never envisioned. It is this combined creativity which will allow us to achieve a cleaner environment without adversely impacting the economic vitality of our country. We support this approach and seek to further its implementation.

Thank you again for the opportunity to present my thoughts on this important issue.

WISCONSIN ELECTRIC POWER COMPANY,
MILWAUKEE, WI 53201,
February 2, 1994.

Ms. Joyce Rechtschaffen, Counsel,
Subcommittee on Clean Air and Nuclear Regulation,
Committee on Environment and Public Works,
United States Senate,
Washington, DC 20510-6175

Dear Ms. Rechtschaffen. Enclosed are my responses to the follow-up questions submitted by Senators Lieberman and Baucus regarding my testimony provided to the subcommittee on October 21, 1993. Please advise if any further questions or clarifications are requested.

Very truly yours,

RICHARD ABDOO,
Chairman of the Board and Chief Executive Officer.

Enclosures

RESPONSE TO QUESTIONS FROM SENATOR BAUCUS

Question 1. Why are the rule changes regarding substitution plans and reduced utilization plans so devastating to utilities? How much do you think this pending rule change has hindered the allowance market?

Answer. The proposed rule changes are devastating to utility compliance planning and implementation activities. The final Acid Rain Core rules were issued on January 11, 1993, eight months after the deadline imposed in the Act. Prior to issuance of these final rules, EPA issued draft proposed rules on June 21, 1991, and proposed rules for public comment on December 3, 1991. During this period and during the ensuing period prior to EPA issuance of the final rules, utilities began formulating Phase I compliance plans, relying on language from the Act and from the proposed rules.

The late issuance of the final rules forced utilities to virtually finalize Phase I compliance plans prior to receiving final guidance and to submit those plans to EPA for review and approval by February 15, 1993, only 35 days after receiving the rules. Utilities developed and began implementing Phase I compliance plans in good faith, believing the proposed and ultimately final rules to be the proper interpretation of the Act. Implementation of these compliance plans requires such actions as engineering and installation of pollution control equipment, evaluation and acquisition of lower sulfur fuels, and use of the new allowance trading system. These activities were well underway when, in mid-July, 1993, EPA, bowing to pressure from several outside interest groups, stated their plans to revise the final rules. This rule revision activity is still underway, and the Phase I compliance deadline (January 1, 1995) looms ever closer.

As I stated in my presentation on October 21, 1993, we understand the final rules were not perfect. However, even with these slight imperfections, sulfur dioxide emission reduction targets would still be met over the long haul. For the utility industry, or any industry for that matter, to be able to move forward aggressively in committing human and financial resources to meet new environmental standards, we need timely rule making and for final rules to remain final for a much longer period. In this case of revising final substitution and compensating unit rules, neither timely rule making or stable rules were achieved. I urge Congress and EPA to work closer with the regulated community in achieving our common emission reduction goals.

Question 2. I was interested to learn that 63 percent of the Phase I compliance by utilities is being accomplished through fuel switching. How much of this switching is in favor of the use of clean coal and how much is in favor of the use of natural gas? How expensive and difficult is it for a utility to switch to natural gas from coal? I am curious because, as you may know, the Clinton Administration's plan to combat global warming relies, to some extent, on utilities to switch to natural gas.

Answer. I am not surprised as to the level of Phase I sulfur dioxide emission reduction achieved through fuel switching. While I don't have a current breakdown for the utility industry as to the use of low sulfur coal versus natural gas, I believe the vast majority of the economic fuel switches made use of lower sulfur coals as opposed to natural gas. This approach on a national level would be consistent with our experience in Wisconsin, where we made substantial reductions in sulfur emissions during the 1980's. Our experience suggests that reductions through switching to lower sulfur coals to achieve Phase I goals can be achieved for on the order of \$200-400/ton of sulfur dioxide reduced. Conversely, costs associated with reducing

sulfur dioxide emissions by switching to natural gas for our system typically exceed \$1000/ton.

The higher costs associated with switching to natural gas are generally driven by the substantially higher fuel cost between coal and gas. In many cases, the gas delivery system to and within a power plant requires substantial upgrading to provide the necessary volume of gas equivalent to the heat input previously provided by coal. Switching from low cost, low sulfur coal to natural gas on our generating system would increase our fuel costs alone by more than 300 percent, from current projected annual expenditures of about \$330 million dollars to more than \$1.12 billion dollars, substantially increasing electrical rates to our customers. This increase in fuel cost does not include capital expenditures necessary to install new gas delivery systems and related equipment. This increase in energy costs and its attendant adverse impact on the nation's economy needs to be considered during any future carbon dioxide emission reduction deliberations.

RESPONSE TO QUESTIONS FROM SENATOR LIEBERMAN

Question 1. You stated in your testimony that excessive controls shouldn't be placed on the free market at the State level. Given the traditional approach to utility regulation in this country, how can these excessive controls be avoided?

Answer. The free market works best only when the required level of control is imposed, and those controls are placed on an even basis on all market participants. If individual States place additional, and at times, protectionist-type controls on utilities within their jurisdiction, those utilities and the entire industry will not achieve the level of cost savings contemplated by Congress. I suggest that Congress and EPA, as it implements this new market based approach, send clear signals to individual States who are considering adding additional, unnecessary controls on market participants.

Question 2. One of our witnesses, Mr. Bartels of Cantor Fitzgerald, testified that intervention by EPA or Congress to prevent State interference would not facilitate market development but would likely paralyze market development from the moment a legislative proposal was announced until it was completed. Would you agree with that view?

Answer. The level of action necessary to minimize State interference may only require the active participation of EPA, and not require additional legislation. In that case, I believe that EPA actions would not paralyze market development. Education of State legislators as to the design and intent of the market based approach may be the best approach for EPA to take to "head off" future State detrimental involvement. Clear signals have been sent to those States designing protectionist laws by the recent court decisions regarding the mandated use of in-state coal resources. To ignore State actions which jeopardize the program will not foster market development.

Question 3. You stated that our common goal is to reduce emissions at the lowest cost possible. However, utilities make decisions based on factors in addition to cost. Is it inappropriate that considerations other than cost also be an influence at the State level?

Answer. Evaluation of approaches to reduce emissions often does include other factors which may be difficult to monetize. For example, the addition of an SO₂ scrubber may generate additional solid waste, which should be considered in the overall evaluation. These considerations are appropriate at all levels, not just individual States.

Question 4. You expressed concern that utilities which have made private allowance trades have not released information on the prices and quantity traded. Is this a problem you believe Congress should address?

Answer. I believe we can encourage other utilities to share allowance trade information rather than requiring that disclosure. Much of the reluctance in sharing trade information is related to the newness of the market, and corresponding price uncertainty. Utilities are concerned State regulatory commissions may decide retrospectively that economic parameters of trades may not have been optimum. However, without active trade information disclosure, utilities have more potential exposure with respect to price uncertainty. I believe my utility counterparts will come to the realization, much like we did, that it is in the best interests for the developing market that trade information be released. I encourage EPA to stress the importance of this facet of allowance trading as they work with utilities in the start-up of this new market.

Question 5. Many of the trades that have been executed so far have been customized transactions involving a trader or broker. In your testimony you emphasize the importance of developing an active public market; however, we can't guarantee that such a market will develop. What impact do you think the lack of market trading would have on cost-effective emissions reductions?

Answer. I believe the issue to be one of timing—the rate at which utilities begin actively using the inter-utility component of the title IV market based system to achieve greater cost savings. Utilities are already actively using the intra-system averaging component of the title IV SO₂ program to achieve significant cost savings over projected costs associated with the command and control approach.

Additional cost savings and efficiencies are realized with inter-utility system trading. I believe in the competitive utility world which is evolving today, cost savings, which translate directly to lower utility rates, will be sought by virtually all investor owned utilities. As utilities become familiar with the efficiencies possible with allowance trading, more will use inter-utility trades. A system or systems will evolve in this new market to enable efficient allowance trading.

Question 6. Lack of appropriate regulatory actions by public utility commissions has been cited by some as a major factor leading to a sluggish market. Do you believe inaction by the public utility commissions has contributed to a sluggish allowance market? What actions, if any, should EPA or other Federal agencies be taking?

Answer. Lack of timely, definitive action by State utility commissions in the areas of allowance revenue and cost rate making and pre-approval of compliance plans may have slowed many utilities' adoption of the market based approach. These important issues need resolution to remove many of the rate-making uncertainties associated with allowance trading. Ideally, resolution should be as consistent as possible across States to maintain a level playing field for utilities. On a related issue, we were encouraged at the timeliness and attention given by FERC on allowance related accounting and reporting issues. I suggest that EPA and FERC continue to work with the State regulatory commissions to resolve outstanding issues. Additional Federal legislation should not be needed at this time.

Testimony
on
Title IV of the Clean Air Act

before the
Senate Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Regulation
October 21, 1993

Submitted by
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This testimony is being presented and submitted by Joseph Goffman, senior attorney at the Environmental Defense Fund. The Environmental Defense Fund, a leading, national, NY-based nonprofit organization with over 200,000 members, links science, economics, and law to create innovative, economically viable solutions to today's environmental problems. EDF has had a long history of involvement in the acid rain issue. In the early 1980's EDF's scientists played an instrumental role in forging the consensus in the scientific community concerning the need to address acid deposition resulting from air-borne pollution from stationary and mobile sources. Throughout the 1980's, EDF also focused on the effects of such deposition on sensitive ecosystems, notably high-altitude aquatic systems in the West and coastal aquatic systems in the East. Long an advocate of the use of market mechanisms in the design of regulatory programs, EDF was invited by the Bush Administration to submit a proposal incorporating such an approach to the regulation of air pollution. In response, EDF outlined a program that mandated 12 million tons of annual sulfur dioxide (SO₂) reductions implemented through a system of marketable permits. From February through July, 1989, EDF worked closely with the Bush Administration and the U.S. EPA to develop this proposal, which was ultimately included in the Clean Air legislation President Bush submitted to Congress in 1989.

In EDF's view, Title IV as finally enacted succeeded in incorporating the most salient features of EDF's original proposal. More important, EDF continues to believe that the design of Title IV represents an environmental triumph by explicitly mandating a 10-million-ton reduction in SO₂ and capping emissions permanently at the reduced level. Indeed, in this testimony, we argue that Congress succeeded in "building in" a very high level of success in the way in which Title IV was designed. In addition to the mandatory reduction and emissions cap, this built-in success is the direct result of Congress' decision to define compliance expressly in terms of actual emissions performance "guaranteed" by continuous emissions monitoring and enforced through the imposition of stiff, automatic penalties. At the same time, by rendering SO₂ emissions and allowances completely fungible, Title IV ensured a substantial level of cost-savings -- simply achieved through traditional utility energy management techniques like dispatching that might have been hindered under alternative statutory designs -- even in the absence of an allowance marketplace as popularly conceived. Part II of this testimony develops these conclusions more fully.

In Part I, the testimony presents EDF's response to some of the specific issues raised by the Subcommittee in its invitation to testify. Specifically, we conclude that:

- * the system already appears to be achieving cost-savings

- * obstacles to the full development of an SO₂ emissions trading market are likely to disappear over time

- * current information suggests that Phase I utilities will achieve more emissions reductions than required (particularly if EPA revises the provisions of the Phase I "substitution" and "compensating unit" rule governing the allocation of allowances)

- * an increasing number of utilities are factoring energy conservation into their compliance strategies

- * the Acid Rain Advisory Committee was invaluable in the EPA's rule-making process with respect to the "core" SO₂ rules

- * Title IV represents a powerful example of law reform that should be applied to other pollution reduction strategies.

In addition, we are concerned that efforts by states either to restrict trading or to restrict utility compliance choices is very likely to be counter-productive both environmentally and economically.

Part I of this testimony develops some of these responses in more detail.

PART I: RESPONSE TO THE SUBCOMMITTEE

A. Achieving Cost-Savings.

Already, there is evidence that the flexibility afforded utilities under Title IV is achieving cost-reductions. Reported compliance costs and allowance prices are lower than those projected during 1990 even under the most optimistic assumptions concerning the capacity of emissions trading to lower costs. Much of this is due not so much to the existence of an active trading market. It simply reflects the basic flexibility granted utilities in complying with Title IV's strict reductions mandates. Utilities have the latitude they need to respond to the fundamental imperative to pursue least-cost compliance strategies, strategies which in the "economic real world" are always more varied, more imaginative and less costly than those projected in computer models.

So long as a single utility succeeds in trading emissions reductions between even just two of its units -- even within the same plant -- then Title IV will have avoided some of the costs that would have been imposed had the Act required unit-by-unit reductions. Even if not a single allowance transfer between non-affiliated utilities is reported nor a single trading broker earns a commission,

Title IV is likely to reap at least 50% to 70% of its cost-saving potential. As the legislative history suggested, allowances -- and SO₂ emissions and reductions -- partake of the same properties of fungibility that electric power does. As a result, by Phase II, allowances and emissions should be fully integrated into utilities' dispatching strategies, moving from plant to plant as each system responds to ongoing electricity demand. It is simply through its role in environmental/economic dispatching that Title IV's allowance system will achieve the bulk of the efficiencies, and consequent cost-savings, that Congress sought. At the same time, the adoption of environmentally integrated dispatching approaches will establish a kind of infrastructure for utilities to use to integrate the response to economic and environmental demands. It is hard to conceive of a scenario under which utilities would not adopt such a high-efficiency dispatching approach to compliance.

The still-awaited development under Title IV is some form of an inter-utility emissions trading market. With the program still only three years old, perhaps the greatest obstacle to the development of such a market to date is simply its novelty. Utilities are so likely to use environmental dispatching precisely because in making SO₂ emissions and allowances completely fungible, Title IV permits utilities to manage their SO₂ obligations under an approach -- economic dispatching -- with which they and their regulators are already fully familiar. Accordingly, opening an inter-utility trading market may depend on the ability of would-be financial intermediaries to design forms of allowance transactions that closely resemble the kinds of transactions with which utilities are already familiar, whether they are fuel purchase contracts or power sales arrangements. Such a project seems to be within easy reach, and once accomplished, a more active trading market could easily develop.

B. "Excess" Emissions Reductions and Allowance Trading Restrictions.

Earlier this year, an energy firm shared with EDF a confidential survey of the compliance plans of Phase I utilities in seven states. According to this survey, these utilities alone were set to achieve at least 2.5 million tons of excess or accelerated reductions over the five years of Phase I. This is the most conservative projection of the several with which we are familiar. To a substantial extent, these "extra" reductions can only be justified -- and for regulated utilities are, therefore, only possible -- because they can fetch a monetary return in an emissions trading market.

That is why it is especially ironic that some state officials may be considering imposing restrictions on allowance trades in the name of environmental protection. If utilities face an allowance market burdened by regulations and restrictions on allowance trading and banking beyond those imposed by the Clean Air Act, the financial justification for overcontrol will be

weakened and the prospect of achieving early extra reductions will be dimmed. Utilities can and will make investments in overcontrol only if they have clear-cut expectations that excess emissions reductions will have the sort of value that an unencumbered market in banking and trading creates. If individual decisions to trade allowances or use banked allowances must clear layers of regulatory review before they are implemented, then much of the certainty needed to create value for excess emissions reductions is destroyed.

C. State Restrictions on Compliance Choices.

Alliance for Clean Coal v. Craig, currently pending in the Northern District of Illinois, challenges Illinois' efforts to restrict, either directly or through incentive mechanisms, the fuel or technology choices available to utilities meeting their emissions limitation requirements under Title IV. While EDF is still weighing the option of filing an amicus brief in that case, we believe that state actions to restrict compliance choices run counter to one of the critical policy choices Congress made in designing Title IV to be flexible.

By eschewing an acid rain program that dictated or favored a particular set of compliance choices, Congress implicitly recognized that utilities faced emissions limitation requirements for a variety of pollutants, requirements that ultimately could be expanded to cover toxics and carbon dioxide. In leaving utilities' SO₂ compliance choices unfettered, Congress gave utilities the opportunity to optimize their compliance strategies over the range of pollutants currently -- and potentially -- subject to emissions limitation requirements.

In late 1989, EDF published an analysis concluding that by maximizing utilities' flexibility in selecting SO₂ compliance strategies, Title IV could maximize concomitant carbon dioxide (CO₂) reductions. In contrast, since state policies that constrict utilities' SO₂ compliance options deprive utilities of the ability to integrate their SO₂ strategies with those that can maximize reduction of other pollutants, EDF's 1989 analysis clearly implied that such policies could dampen Title IV's potential to deliver ancillary CO₂ reductions. Congress itself appeared to recognize the interplay between Clean Air Act compliance and CO₂ emissions. Section 1605(b) of the Energy Policy Act of 1992 permits entities undertaking projects that result in greenhouse gas emissions reductions to register those reductions with the Energy Information Agency. Clearly, utilities that are making fundamental investment decisions in connection with new Clean Air Act compliance requirements are in a position to choose compliance options that are at least consistent with achieving reportable CO₂ emissions reductions. State policies confirming the range of utilities' SO₂ compliance options could deny utilities such CO₂-reducing options.

In addition to affording utilities complete flexibility in complying with their

SO2 requirements, Title IV's emissions trading provisions give utilities an ongoing incentive to make continual innovations and improvements in their compliance approaches, innovations and improvements that can lead to both lowered costs and enhanced environmental performance. If, however, states interpose constraints on utilities' compliance choices, then those constraints simply will block the signals for innovation that otherwise would be transmitted from the emissions reduction market.

D. Title IV as Law Reform

As Part II of this testimony elaborates, Congress designed Title IV by marrying the flexibility of emissions trading with a rigorous compliance regime characterized by key elements that were essentially novel as compared to much previous pollution control legislation. Often in the past, sources' compliance requirements have been defined in terms of emission rates or technologies prescribed by regulation. In practice, sources can be in compliance without achieving the actual emissions reductions expected or necessary to achieve the environmental objective -- e.g., attainment of the groundlevel ozone standard. This is because economic growth among regulated sources can result in high levels of actual emissions even if the sources are operating at relatively low emissions rates. In addition, the process of setting technology requirements for classes or categories of sources easily can be biased away from the achievement of optimal emissions reductions. Obligated by either law or political necessity to account for cost in setting standards or timetables, regulators may prescribe technology according to the "least common denominator," setting requirements at modest levels in order to ensure that the sources that otherwise might face high compliance costs are spared those costs.

Title IV offers a different paradigm. After determining the actual emissions reduction tonnage to be achieved, Congress simply defined each source's compliance requirements explicitly in terms of the actual emissions to which it was limited, and capped total emissions from all sources. Sources must install continuous emissions monitoring and report their actual emissions regularly. If they violate their emissions limitation requirements, they pay automatic fines set at levels two or three times the cost of compliance while also providing for excess emissions reductions to offset their excess emissions.

With this compliance scheme, Congress all but assured that the emissions reduction objectives of Title IV would be met -- a level of assurance of actual performance that few other pollution control programs can claim. At the same time, Congress decisively re-allocated the roles of government and complying sources. Regulators can narrow their role to guaranteeing that the sources actually achieve their emission limitation requirements. The sources themselves can focus on their own highest area of competence: selecting the optimal

strategies for achieving compliance. It is a market in pollution clean-up, rather than often politicized bureaucratic rule-making, that helps sources harness the complex, widely dispersed and ever-changing information needed to select those optimal strategies. Regulatory intervention -- in the form of enforcement -- can be targeted surgically on non-compliers; the vast majority of sources, those that comply, are not burdened with costly regulatory transactions, nor are precious regulatory resources diverted by the need to impose redundant reviews of each complying source's compliance strategy. Finally, innovation, which is indispensable both to the continual enhancement of environmental performance and to moderating costs, is not dependent solely on bureaucratic processes and rulemaking. Instead, innovation is also continuously stimulated by the market for clean-up represented by emissions trading; that market not only rewards sources that overcontrol and "taxes" those that undercontrol, but its flexibility also permits sources to respond immediately and directly in applying new ideas and approaches.

Congress, the EPA and state and local regulators must design programs to control an enormous array of pollutants with widely varying and complex characteristics. For many, emissions trading may be completely counter-productive. Nevertheless, pollution program-designers should start by looking to Title IV as an exemplar of the critical characteristics that all successful pollution programs should share.

PART II: ANALYSIS OF THE TITLE IV ACID RAIN PROGRAM

A. Introduction

When the 101st Congress finally passed the Clean Air Act Amendments of 1990 on the last two days of the second session, one of the features of the legislation that Senators and Members lauded most frequently was the "innovative" acid rain emissions trading scheme in Title IV of the legislation. With the first utility plant sulfur dioxide reductions mandated by Title IV still more than a year away, the clamor to judge the success or failure of the program is already rising. In the space of less than one week, the New York Times ran two different stories on the subject. On February 1, a Business Day piece cited the relative dearth of emissions trades and suggested that the utility industry was institutionally incapable of responding to the opportunities and incentives created by emissions trading. The front page of the February 6 edition, highlighted the fears of New York environmentalists that active trading between New York and Midwestern utilities would defeat the protection of sensitive ecosystems that the mandatory reductions are otherwise expected to offer.

Nearly three years after the program was enacted, the public, media and policy-makers may be discovering that the terms of the legislative debate -- which

focused on emissions caps and regional allowance allocations, with a rhetorical nod toward cost-savings and the virtues of "harnessing market forces" -- may have done as much to disguise, as to clarify, those expectations against which the program's successes and failures can be judged.

As established under Title IV, the acid rain program represents a major new environmental initiative. At the same time, it showcases a major-scale application of a market-based policy tool. Judging and evaluating the performance of the program will occur inevitably over time. Carefully identifying the categories of evaluation now, well before the program is in full swing, is critical, and may even help utilities and their regulators understand the choices they face and the consequences of their choices.

To most observers, the conclusive sign of success for the program -- and the outcome about which there is the greatest suspense -- will be the development of an active, robust and liquid allowance market. Under these conditions, utilities would enjoy maximum flexibility in their compliance plans and the greatest opportunity to minimize their costs. Indeed, such a development would mark the success of Title IV as spectacular. Success of such dimension also could take the form of massive excess reductions during Phase I, since the environmental benefits of the program would be accelerated. The greater and earlier the reductions the greater the protection offered to sensitive ecosystems, public health and regional visibility.

Even in the absence of either of these "spectacular" developments, however, the probabilities favor the success of the acid rain program in achieving its core emissions reduction and economic objectives. In fact, the legislation includes key design elements that endow the program with an almost self-fulfilling capacity in delivering the basic success that its proponents and supporters sought.

B. Background

In 1980, the National Academy of Sciences issued a report linking sulfur dioxide emissions with the acid deposition, associated in turn with observed damage to sensitive aquatic and forest ecosystems. The report called for a 50% cut in nationwide sulfur dioxide emissions, then totaling 24 million tons per year. Throughout the 1980's a variety of bills were introduced in Congress aimed at achieving anywhere from 8 million to 12 million tons in annual sulfur dioxide emissions. Some featured flexibility by imposing emissions limitation requirements in terms of state-wide average emissions rates. Others imposed plant-by-plant emissions rate requirements and offered subsidies to utilities using stack scrubbers to meet their emissions limitation requirements.

These variations reflected competing regional interests. Those who saw acid rain legislation as creating new markets for low-sulfur coal, often mined in the West, promoted flexibility and opposed efforts to mandate or subsidize stack scrubbers, whose use would permit utilities to continue to use high-sulfur coal. Conversely, those representing the Midwest favored measures, like the imposition of plant-by-plant rate limits that effectively mandated scrubbers, to preserve the demand for high-sulfur coal. At the same time, arguing that they would bear a disproportionately high share of the program's compliance costs, Midwestern utilities pushed for subsidies to offset those costs.

Despite the concerted efforts of environmental advocates who argued that growth in demand for electricity would erode any emissions reductions achieved. None of the proposals, save for one reported out of the Environmental Protection Subcommittee in 1987 limited plant emissions to a specific level of annual tons or imposed a cap on total annual emissions. Throughout the debate, the projected high cost of the program loomed as a dominant factor.

C. The Objectives of Title IV

According to the legislative history of the 1990 Amendments, the objective of the acid rain program "is to reduce annual SO₂ emissions by 10 million tons below 1980 levels by the year 2000." Report of the Committee on Environment and Public Works, U.S. Senate, Clean Air Act Amendments of 1989, Report 101-228, p. 302. Title IV purports to ensure this by imposing specific emissions tonnage limitation requirements on every existing utility unit in the 48 continental United States, by requiring new units to secure emissions offsets for each ton of SO₂ emitted and by authorizing the EPA to allocate annually no more than 8.9 million emissions allowances, without which utilities may not emit sulfur dioxide.

So long as a utility holds allowances in an amount equal to its annual SO₂ emissions it may transfer, acquire and bank allowances freely. The legislative history cites several benefits that can or will result from this system of marketable allowances. With utilities enjoying the maximum range of compliance choices, overall program costs can be minimized. Utilities or regions with high overall costs can use the allowance market to generate revenues to offset those costs, while those with growth in energy demand can avoid higher cost on-site reductions. Indeed, the allowance market was cited as the device that would allow utilities to hold their total emissions at a constant level while continuing to respond to economic growth and the resulting demands for energy. Incentives created by the allowance market and the emissions cap were expected to induce greater-than-required reductions earlier than required and to stimulate innovation. At the very least, the fungibility of emissions allowances was expected to permit utilities to use "environmental dispatching" so as to integrate

SO2 emissions control with customary power-pooling and economic dispatching practices.

D. The Emissions Objectives: A Quest for the Statutory Fail-Safe

While Title IV is often described as an emissions reduction program "implemented through a system of emissions trading," in fact the required emissions reductions can, and, if necessary, will, occur even in the complete absence of an allowance market. Under Title IV, all that is "implemented through a system of emissions trading" is the ultimate allocation, between and among individual plants, of emissions reduction responsibilities and costs. Although compliance is defined in terms of the number of allowances held for each unit, Congress took great pains to quarantine the program's compliance scheme from the vagaries of emissions trading, including both the utter absence of trading and hyperactive and volatile trading.

Title IV's compliance scheme not only stands wholly apart from the development (or lack thereof) of an allowance trading market, but it also incorporates critical elements, many unprecedented, aimed at eliminating the possibility that the required emissions reductions will fail to be achieved. First, the statute itself imposes absolute liability for achieving the required SO2 emissions reductions directly on each utility unit. As stated in the legislative history, Congress intended to "impose[, as a matter of law, an absolute emissions limitation obligation on each unit ..., notwithstanding" other provisions of the Title or even EPA's default in allocating allowances or promulgating regulations. Senate Report, pp. 327, 328.

Once allocated, allowances double as both the currency through which emissions are traded and the instrument through which each unit's emissions obligations are implemented. At the same time, the allocation of allowances also serves as the near fool-proof method of fixing an annual cap on nationwide utility SO2 emissions. Title IV constrains the EPA to allocate allowances in each year beginning in 2000 so as to ensure that annual emissions do not exceed 8.9 million tons (although allowances banked from other years as well as those resulting from "bonus" allocations may bring the total higher). The supremacy of the cap is made absolute by language expressly authorizing the EPA to reduce each plant's allocation if necessary to ensure that the 8.9 million ton limitation is met. The efficacy of the cap is guaranteed by the fact that all utility units, new and existing, are subject to it.

Title IV's compliance scheme is completed by two additional elements. First, each utility unit must install continuous emissions monitoring equipment and report its emissions regularly. Second, non-compliance brings stiff automatic monetary penalties at levels well above the cost of compliance and an

automatic reduction in the unit's allowance allocation for the purpose of offsetting its excess emissions.

As an emissions reduction program, Title IV appears unusually favored with features that predict all but certain success in meeting the announced objectives: reducing total emissions by 10 million tons per year from 1980 levels. As discussed in Part I, D. above, what unites these features, giving the compliance scheme a striking coherence, is that they are all purely performance-focused. Compliance is defined strictly in terms of emissions tonnage limitations. The program incorporates no standard or activity (e.g., the installation of prescribed scrubbing technology or the use of a specific fuel) that offers an alternative path to compliance apart from each unit's meeting its emissions tonnage limitation. As a result, Title IV escapes the possible conundrum, which often plagues other environmental programs, of finding that while sources may be in compliance with applicable standards, total emissions reductions fall short of program objectives.

Sources' liability for meeting their emissions requirements arose with the enactment of the legislation. As a result, the program does not face the risks of delay and avoidance often associated with programs which depend on rulemaking to create pollution control obligations. At the same time, since EPA can concentrate its resources on physical monitoring and enforcement, the likelihood that substantial non-compliance will defeat the program is small.

E. Phase I: Holding Its Breath Until Phase II

The ultimate emissions reduction objectives of Title IV are embodied in the second phase of the program, which begins in year 2000. Title IV also provides for intermediate reductions to begin in 1995, by imposing emissions limitation requirements on 110 of the nation's highest-emitting plants. The compliance infra-structure of statutory obligations, allowances, continuous emissions monitoring and automatic penalties requiring both monetary payments and offsets for excess reductions is identical to both Phases. On the other hand, by failing to include all plants and to impose even an intermediate emissions cap, Phase I fails to attain the near-perfect reliability of Phase II's compliance strategy.

The absolute emissions cap in Phase II is one of the keys to the program's reliability. Among other things, the cap provides a built-in definition of "surplus" reductions available for transfer from one unit to another. Since each unit holds a share of a fixed number of SO₂ allowances, which govern the total number of allowable emissions, any plant that reduces emissions to a level below the number of allowances it holds creates "surplus" -- and therefore tradeable -- reductions. Thanks to this, Title IV and complying sources are free to treat allowances and emissions as completely fungible, again, without jeopardizing the

emissions performance of the program. The cap ensures that trading never results in an increase in emissions compared to the level of emissions that would occur in the absence of trading. Utilities can exploit least-cost environmental dispatching and any other approach that maximizes reductions at the lowest-cost reducing sources and, in the end, total mandatory reductions will be achieved.

By failing to construct Phase I as an all-inclusive, capped system, Congress was forced to improvise in regulating the role of Phase II units during Phase I. First, Congress expressly blocked Phase II units from "opting in" to Phase I. This reflects the fact that in calculating Title IV's emissions reduction objective, Congress relied on "base case" projections indicating that emissions reductions would occur at some Phase II units between 1985 and 2000 even in the absence of legislation. If these units opted in and these base case reductions were used to offset required reductions by Phase I units, then net Phase I reductions would be lessened. In that case trading would result in a loss of emissions reductions, an outcome that Congress was adamant about precluding.

By itself, however, barring Phase II units' participation in Phase I would have prevented Phase I utilities from adopting the dispatching and other high-efficiency reduction strategies that are available in Phase II if these strategies involved Phase II units. Accordingly, Title IV includes two provisions which attempt to inject into Phase I the combination of flexibility and reliability built into Phase II by operation of the emissions cap. One permits reductions achieved at a Phase II unit to be "substituted" for those required at a Phase I unit. In keeping with the need to establish a clear definition of "surplus" -- and therefore tradeable -- reductions, Title IV stipulates that "substitution plans" must achieve at least as many reductions as would have been achieved at the participating Phase I and Phase II units in the absence of the plan. Again, the effect of this requirement is to ensure that "base case" reductions at Phase II units are not used to offset required reductions at Phase I units and thus lower total net Phase I reductions. This, in turn, ensures that trading never results in an increase in emissions.

Recognizing the virtue of environmental dispatching, Congress authorized Phase I units to shift generation to Phase II units provided, again, that such generation-shifting does not result in more emissions than would occur in the absence of the generation-shifting.

Taken together, these provisions should endow Phase I with a rough-and-ready equivalence to the Phase II cap and its guarantee of both reliability and flexibility. With a working distinction that identifies "surplus" reductions at Phase II units, Title IV allows Phase I utilities to tap low-cost reductions at Phase II units as well as full-system dispatching.

Unfortunately, the Phase I flexibility scheme required EPA to engage in Phase I rule-making that is far more complex than that required in Phase II, which relies strictly on express statutory emissions limitation requirements. The resulting rules failed, however, to implement the Phase I scheme correctly. The final rules simply ignored Title IV's requirement that substitution plans achieve the same reductions that would have occurred at the participating units in the absence of the plan. In addition, the rules governing generation-shifting permit emissions increases to occur when Phase I units shift generation to Phase II units.

In March, 1993, the Environmental Defense Fund and the Natural Resources Defense Council petitioned the Court of Appeals for the D.C. Circuit for review of the rules. During that period, some Phase I utilities submitted substitution and generation-shifting compliance plans that clearly violated the letter and intent of Title IV by incorporating Phase II units with "pre-programmed" reductions and proposing to use the reductions to offset reductions required for Phase I units. As a result of these developments, EPA announced in mid-July, 1993, its intention to reconsider, and possibly modify, the rules.

Skeptics of emissions trading might leap to the erroneous conclusion that these problems are inevitable in an emissions trading scheme. In fact they are the product of Title IV's failure to include all utility units in Phase I. This, in turn, prevented Congress from legislatively codifying all emissions reduction requirements. Instead of Phase I compliance being strictly emissions- or performance-based, Phase I depends in part on EPA regulations which, unless they are changed, define compliance in a way that does not necessarily deliver what would otherwise seem to be the required emissions reductions.

However EPA -- or the courts -- resolve the issue, the problem will disappear after five years when, in year 2000, Phase II begins and the all-inclusive emissions cap is imposed. This should reassure those anxious about the achievement of the emissions reductions required by Title IV. In addition, those fearful that the controversy surrounding the substitution and generation-shifting rules is a harbinger of endless EPA-regulatory uncertainty that will kill the emissions trading market also can put aside their concerns. Since so much of Title IV is performance-driven, little else in Title IV beyond these rules is susceptible to this level of EPA intervention and potential reversal. If anything, changes in these rules are likely to strengthen the market and its environmental performance. A change in EPA's rules that correctly implements the statutory requirements for substitution and generation-shifting strategies will increase the value of truly surplus reductions, increasing the reward available to those who create such reductions. This, in turn, will solidify the pronounced trend, which already exists among Phase I utilities, to make more reductions than required. Indeed, at least one survey of Phase I utilities' planned compliance suggests that

Phase I, driven by the opportunities and incentives of the emissions market, will achieve 2.5 to 5 million tons of extra reductions.

Thus, despite its imperfections, and particularly if EPA modifies the rules as required, Phase I is likely to produce substantially more reductions than required. The ability of the emissions trading market to turn surplus reductions into cash appears to be leading utilities to make such reductions. At the same time, however active utilities may be in selling these reductions, overcompliance, in the form of ongoing banks of surplus reductions, is likely to persist throughout the program indefinitely. If so, the market's contribution to the environmental success of Title IV will be unmistakable.

F. The Self-Fulfilling Objectives of Phase II's Design

The purity of Phase II's performance-based compliance system seems to have endowed Title IV with the highest degree of reliability in reaching its emissions reduction objectives. At the same time, the allowance system offers utilities a seamless flexibility in pursuing their compliance strategies. From that flexibility is almost certain to emerge a record that will meet, at least in substantial part, Congress' purposes and expectations.

As discussed in Part I, A, above, even in a universe of exclusively intra-system trading embedded in dispatching, Title IV will have established some basic experience for the use of inter-source emissions trading as a tool for implementing an emissions reduction policy.

G. The Stakes Still on the Table

Only future events can deliver certain other benefits beyond those that seem foreordained by the design of the program itself. In the absence of a fully developed inter-system and inter-state market in which all utilities participate, ratepayers and shareholders will be burdened with a certain measure of avoidable cost, corresponding to the 30% to 50% of the potential cost savings that lie beyond intra-system efficiencies. Without such a market, Midwestern utilities will miss the potential inter-regional revenues Congress implicitly offered in adopting a market-based approach. At the same time, independent power producers building new plants may have to rely on the EPA allowance auction, mandated by Title IV, to secure the offsets needed for those plants. Finally, independent entrepreneurs may find fewer opportunities to advance their innovations if, instead of a market, they must tailor their approaches and strategies exclusively for intra-system dispatching.

As a market-designed emissions reduction policy, Title IV seems to be free of obstacles to the achievement of a full-blown market. Admittedly, by including

such a small percentage of the nation's utility plants in the five years of Phase I, Title IV virtually doomed the market to an exceedingly slow beginning -- a beginning that may be further retarded, however temporarily, if some of the substitution rules necessary to Phase I become the subject of litigation. Phase II, however, will foster precisely the economic dynamics (e.g., a plethora of sources with widely varying costs) that could make market forces almost irresistible. Little if anything in the design of the Phase II allowance system poses a drag on such dynamics, since uncertainty about the rules of the system itself was purposely eliminated (Phase II allowance allocations have already been announced), the rules are simple and transactions costs are minor.

The obstacles to the market's development are extrinsic to Title IV. Rather, they inhere in the institutional character of utilities as publicly regulated entities. Ultimately, it is the establishment of public confidence in the system and the approach that several state regulatory commissions take to ratemaking that will determine whether the economic dynamics of the program will be actualized as a market.

NOTE: Attachments to this statement have been retained in committee files.

Prepared Written Statement of

Patrick H. Arbor

Chairman, Board of Trade of the City of Chicago

on

Implementation of the Acid Rain Provisions
of Title IV of the
1990 Clean Air Act Amendments

Before the Senate Subcommittee
on Clean Air and Nuclear Regulation

October 21, 1993

Thank you for providing the Chicago Board of Trade (CBOT) this opportunity to discuss the developments to date in the sulfur dioxide emission allowance market. As the world's oldest and largest futures exchange, the CBOT has almost 150 years of experience in fostering the evolution of various types of markets, from cash grain markets to the first financial futures contracts in the 1970s. Now we are playing an active role in the development of market tools for protecting the environment. These experiences permit the CBOT to provide a unique perspective on the current state of development of the sulfur dioxide emission allowance market and its full potential for lowering the costs of reducing those emissions. Our experiences can also help assist in development of applications of market tools to other pressing environmental problems.

I would like to give you some background on the Chicago Board of Trade and its role in the allowance market. Next I will explain how we analyze the supply and demand conditions reflected in the first allowance auctions. I will then address the current state of market evolution as well as the barriers that have been identified as factors preventing the market from reaching its full potential.

In 1848, the Chicago Board of Trade (CBOT) was founded to provide a rational, effective and inexpensive mechanism for buying and selling physical agricultural commodities. Our simple, but effective cash grain markets started our evolution into the world's busiest futures exchange. Our marketplace serves the worlds of agriculture, industry and finance by providing instruments for managing the risk of

price fluctuation. We currently sponsor trading in over forty different futures and options markets. These markets provide an efficient, reliable mechanism for buying and selling, transferring price risk, and generating price information that is disseminated around the world to provide a benchmark for market decisions. The CBOT plans to provide a centralized market for trading in emission allowances, which will generate similar benefits for those involved in this innovative market.

Based on our experience in developing and supporting a wide variety of markets, we have learned that for participants to take full advantage of trading opportunities open to them, some key conditions must be present. Among these conditions are:

1. Buyers and sellers must have an incentive to trade; market participants must perceive that an economic benefit is possible as a result of trading.
2. Participants must understand the process of trading and feel secure with the counterparties they trade with or the intermediaries they use.
3. The parties must be confident that the rules that govern the market and greatly affect value are fair and not subject to arbitrary change.
4. The financial benefits of trading must persist after the costs of regulations and taxes are taken into consideration.

These conditions are just as true in the emission allowance market as in trading in soybeans or U.S. Treasury bonds.

CBOT Sponsorship of Markets For SO₂ Emission Allowances

When Congress passed the 1990 Clean Air Act Amendments, the CBOT recognized that the emission allowance market represented an opportunity to extend the services our exchange provides so successfully in other markets. It was clear to us that Congress had passed a law that represented a revolution in environmental policy, and the Chicago Board of Trade is always eager to help lead in the evolution of new markets.

In our view, the growing use of markets to help protect the environment is part of an enormous shift worldwide to a recognition that markets are the most efficient means to improve living standards. The major shift we see in eastern Europe and China toward free market approaches represents implementation of the ideas embodied in the Chicago Board of Trade and the Chicago school of free market economics. As you may know, the past four winners of the Nobel prize in Economics have come from the University of Chicago. Among these winners is Professor Ronald Coase, who several decades ago first proposed that markets and trading could offer a more efficient means for solving environmental problems.

Because the market-based approach to protecting the environment lowers the price every citizen pays, this approach will not only save consumers money but will also make our economy more competitive. Lowering the price tag on protecting the environment also encourages society to purchase a larger amount of environmental

protection. Congress crafted an innovative, win-win approach to protecting the environment with the sulphur dioxide emission market. This pioneering innovation is precisely the kind of effort that helped make the Chicago Board of Trade the world's leading futures exchange, and we applaud the Congress for passing such bold and creative legislation.

Starting new markets is not easy; the CBOT has often faced many of the challenges the EPA encountered in devising rules for the allowance market. We shared the benefits of our experience with EPA as they made important decisions about market rules and design. These decisions addressed market-tuning issues such as an appropriate method for identifying allowances, procedures for handling payments in the annual allowance auctions, and other detailed issues related to commercial trading practices.

Recognizing that the new emission allowance market might need some help in getting started, Congress established annual auctions for the purposes of stimulating the market, providing both a backstop source of allowances and generating price information. Congress also provided for an annual direct sale of allowances at a set price, and provided that independent power producers would have first priority in purchasing those allowances.

Congress gave EPA the option of delegating the responsibility for administering the auctions and direct sales to outside parties. EPA chose to pursue this option, and

invited parties willing to conduct the auctions to apply for that responsibility. The CBOT was one of several marketplaces that applied to administer the auctions.

Following this competitive application process, in August 1992 EPA selected the CBOT to administer the annual auctions and direct sales for three years. EPA retained the right to terminate the delegation, and will review the agreement after three years. The CBOT is not compensated for administering the annual auctions. We designed the procedures used to administer the auctions and direct sales in complete conjunction with EPA. EPA maintains all policy authority, and the CBOT acts simply as its administrative agent.

In our application to EPA, the CBOT outlined a complex of services we believe must evolve to allow the allowance market to function as intended. In the short run, utility consumption of emission allowances will fluctuate due to variations in weather conditions, economic activity, and power plant outages. Over the long term, utilities face strategic challenges in determining the least-cost method for complying with the law. Among these choices are installation of pollution control equipment, consumption of lower sulfur fuels and modification of the use of various electric generating plants. These choices are expensive and especially risky due to the lengthy time lapse between decision and consequence -- a concern which can be addressed by the use of a variety of trading vehicles. One requirement, however, is clear. Utility decision-makers will have a pressing need for accurate allowance price information.

To help meet the needs of utilities, the CBOT plans to offer an ongoing "cash" market for allowances where utilities and others can immediately exchange allowances and payments. First, however, we feel the market still needs better price signals; to provide these price signals, we plan to offer periodic auctions to help further early development of the allowance cash market. These auctions will supplement, not replace, the annual EPA auctions.

To provide tools for managing the long-term risk inherent in the market and to generate prices indicative of future transaction values, the CBOT will also offer futures and options markets based on emission allowances. We anticipate that emission allowance buyers and sellers will use futures and options to protect themselves from price risk, and to obtain more predictability and certainty in their purchase, sales and compliance plans. The prices generated in trading these contracts will help utilities identify the lowest cost choice for complying with the emission reduction mandates called for by the law. Our regulator, the Commodity Futures Trading Commission, has concluded that these contracts can fulfill a real economic need, and has approved the contracts for trading.

To help build the allowance market, the Chicago Board of Trade first focused its educational effort on the state public utilities commissions around the country. We recognized that utilities would not be capable of using the market to its full advantage unless their regulators understood the benefits of the market, and established clear guidelines governing utility use of the market. We also undertook a major educational

effort through industry and trade seminars and conferences that continues to this day. Throughout this effort we encourage the use of the EPA auctions as a reasonable first step in participating in the market.

In an effort to boost participation in the EPA auctions, the CBOT made arrangements to allow bidders to place their bids anonymously through our member firms. EPA endorsed this alternative, and we encouraged all participants to consider it. Because CBOT members firms have credit standing with the exchange, bidders who placed their bids through our member firms had an additional short-term financing option available to them. While there was limited use of this service, we are confident that more bidders will take advantage of this option in future auctions.

Results of the First EPA Auctions in March 1993

By law, EPA was required to auction 50,000 allowances usable in 1995 (the "spot" auction), and 100,000 allowances usable in the year 2000 (the "advance" auction). 1995 is the first year of Phase 1 of the program, which covers 265 power plant units, and year 2000 is the first year of Phase 2, which covers over 2,200 power plant units. The allowances auctioned by EPA -- the EPA reserve -- were by law withheld from utility accounts. The EPA reserve allowances are sold in order of price, selling first to those who bid highest, and continuing down through the bids until the entire EPA reserve is fully sold.

Additional offered allowances were voluntarily put up for sale by utilities. Their offers

brought the total number of allowances available for sale to 275,510, nearly double the EPA reserve. For the spot auction, 95,010 additional allowances were voluntarily offered for sale. For the advance auction, 30,500 allowances were offered voluntarily.

On the buy side, the auctions generated bids for nearly twice as many allowances as were available. Sales prices in the spot auction ranged from \$131 to \$450, and averaged \$156 per allowance. In the advance auction, sales prices ranged from \$122 to \$310, with an average sales price of \$136 per allowance. By law the proceeds from the auction, a total of \$21.4 million, were returned to the utilities from whom the allowances were withheld. This meant that utilities were forced to determine, in conjunction with their regulators, how revenues from the auction market would be distributed. So the auction had a number of additional benefits beyond the immediate ones intended by Congress. It forced the issue of regulatory treatment with the state public utilities commissions, precisely one of the areas where further progress is needed to help make this market succeed. (A complete summary of the auction results is included as Appendix A).

Because the voluntarily offered allowances are sold after the EPA reserve is sold out, and because most of the offer prices were higher than the remaining bid prices, only 10 voluntarily offered allowances were sold in the first spot auction. None were sold in the 1993 advance auction.

According to the law, an annual "direct sale" of 25,000 allowances usable seven years

in the future (the allowances currently available at direct sale can be used in the year 2000 or later) is to occur at a price of \$1,500 per allowance, and that price is to be scaled up by the rate of inflation. The direct sale was established to assure that some allowances would be available for purchase regardless of market conditions. The law gave independent power producers first priority in purchasing these allowances. Because direct sale prices are currently set at over \$1,600 per allowance, to date no allowances have been sold. By law, the direct sale allowances that go unsold will be sold in the subsequent year auctions. This means the EPA reserve portion of the next auction, to be held in late March 1994, will make available 50,000 allowances usable in 1995 or later, 25,000 allowances usable in the year 2000 or later, and 100,000 allowances usable in 2001 or later.

The advance auction was dominated by only three utilities. This suggests that very few Phase 1 utilities have clarified their compliance plans for Phase 2. We have also found that almost no states that are affected only during Phase 2 have issued regulatory guidance to their utilities.

In addition to auction activity, nine allowance transactions or trades have been reported to date in the open market. (See Appendix B for details.) Trading has been restrained in this very early stage of the program.

The auctions and trades were widely covered by both domestic and international media. Indeed, the entire allowance program has received extensive international

coverage. While some in the media present hostile and incomplete information about the allowance market, others are effective in raising the level of awareness and understanding of the market. Some major buyers in the auction tried to anticipate negative media coverage of the allowance trading program by explaining the cost-saving nature of their allowance purchases to local media when the auction results were announced. In one case a newspaper editorial applauded the nearby utilities and argued they had taken sensible steps to save utility ratepayers money by buying allowances in the auction. (See Appendix C for press reports on the auctions and other developments in the allowance market).^{*} However, even the helpful media coverage usually fails to report that the rules protecting local air quality remain in force independent of the emission allowance program. The CBOT has taken every opportunity to emphasize this critical fact in our public statements.

Subsequent to the auctions the EPA informed us that our performance in conducting and publicizing the auctions was excellent. We take pride in that recognition, and we stand ready to work with the EPA in making whatever modifications are deemed necessary to make the future auctions work even better.

What Have We Learned From Market Activities to Date?

The price data generated by the voluntary offers to sell allowances during the auctions provided an unprecedented amount of sell side information for this market, fulfilling one of the purposes Congress intended. What we saw from the voluntary offers were parties who were willing to sell on the spot at prices that had not been publicized prior

^{*}Appendix C has been retained in committee files.

to that time. Indeed, in the spot auction over 30,000 allowances were offered for sale at \$255 or less. In the advance auction over 25,000 allowances were offered for sale at \$307 or less. Given the scarcity of price and quantity information prior to the auctions, the offer prices validated the idea that purchasing allowances from utilities making extraordinary emission cuts is a feasible option for complying with the law.

Such price information is also a critical component of subsequent allowance trading. That price information will aid utilities in evaluating a wide range of options for complying with the law. The small number of trades to date does not mean the program is not working. We are told by affected utilities that they and their regulators are reviewing all of the options for complying with the law and are trying to select those options that are most cost-effective, consistent with the other unique constraints that most utilities face. In that regard the market appears to be working well.

The flexibility in the law appears to be encouraging competition among the eligible compliance options. By letting one utility make extraordinary emission cuts to fulfill the cleanup requirements of another utility as well as its own, allowance trading in effect allows multiple emission sources to share the benefits -- and the costs -- of a single emission scrubber. This lets both the buyer and seller of emission allowances take advantage of economies of scale in emission control technology. Utilities have told us that the allowance market has encouraged them to develop innovative and low-cost emission control strategies that probably would not have been allowed under a command and control regulatory regime.

Even without a large number of trades, EPA's estimates of the annual cost of complying with the law indicate that the primary goal of the market-based approach -- lowering the cost of reaching the tightened emission limits -- is working well. EPA estimated that the annual nationwide cost of reaching the new emission standard under an inflexible command and control regime would have been \$5-6 billion per year. Based on the emission allowance prices observed in the open market, EPA now estimates that the cost appears to be closer to \$2-3 billion per year. If these results hold up, the program will be a major success.

Some of the results of both the auctions and the other trades made to date strongly suggest that the conditions for market success that I outlined earlier are not yet widely available.

Regarding market incentives, why did only about a dozen utilities purchase allowances in the first auctions, since the EPA auction represented perhaps the most straightforward, inexpensive mechanism for attempting to buy allowances? This may reflect the fact that in its early stages insufficient incentives exist to participate in the market. Is subsequent trading failing to flourish because incentives are absent or for other reasons? We know there are utilities who are in a position to sell, and others who are willing to buy, but various uncertainties inherent in a new market, as well as some disincentives, may be holding them back.

Because the market is a new and unfamiliar process, some utilities may find that their strongest incentive is to hold onto the allowances they might otherwise be able to sell. Some may feel the economic benefits are greatest by waiting until more price information and examples of trading are observed.

The second important market condition -- that participants must understand the process of trading and feel secure with the counterparties they trade with or the intermediaries they use -- is also affecting participation.

Several trades have occurred, and more may have taken place that were not made public. Clearly, some participants have reached an acceptable level of understanding, and have developed confidence in their counterparties as well as any intermediaries involved in the process. However, other participants have told us they encountered difficulties regarding the creditworthiness of potential counterparties, and have not found suitable intermediaries.

EPA has not yet activated the Allowance Tracking System (ATS). The ATS acts as the central listing and transfer mechanism for allowances, and also links all emissions data with allowance holdings. That system is vitally important to parties involved in a trade because it, and only it, can provide an official recordation of property transfer when allowance purchases or sales are made. The lack of an official mechanism for recording allowance transfers introduces legal costs and uncertainties that discourage trading.

Several utilities are eager to use the markets the CBOT has planned because we offer financial guarantees and streamlined trading. However, we have chosen to postpone the launch of the CBOT cash trading system and auctions until EPA activates the Allowance Tracking System. EPA expects to launch its Allowance Tracking System in the near future, so that will resolve this particular problem. In the meantime, we will continue to work with EPA to assess the viability of an interim mechanism for transferring allowances.

Confidence in the sustainability of the current rules that govern the market may be fading as utilities await critical guidance from state regulatory commissions. Most states have not yet issued rules governing utility participation in the allowance market. Utilities simply do not know what decisions are cost-effective and reasonable until they know the ground rules to be applied to purchases or sales of allowances. Some of the auction participants express a hesitancy to use the market further until they receive regulatory guidance from their state utility commissions.

Some utilities also fear that their regulators will penalize them in the ratemaking process if changed market conditions make early trades look unattractive in hindsight. Also, some utilities express a fear that ratepayers will receive all the benefits of trading, while losses due to trading, however calculated, will be levied on utility shareholders.

I should note that EPA and the Federal Energy Regulatory Commission (FERC) have

taken some significant positive steps to help address the need for guidance from state utility regulators. First, FERC issued modifications to the Uniform System of Accounts to provide a standard process for recording and valuing emission allowance purchases, sales, inventories and consumption. In some cases these guidelines do help clarify the regulatory treatment utilities can expect. Another helpful step has been the EPA's sponsorship of a series of policy forums to help state utility regulators better understand the allowance market and the regulatory options open to them.

However, EPA has not yet finalized all the underlying rules governing the allowance market, such as the rules governing substitution units. The substitution unit provision lets utilities lower the cost of complying with the law by allowing power plants that are not covered during Phase 1 enter the program and make extra emission cuts on behalf of plants that are covered during Phase 1. Because many utilities have told us they are hesitant to trade for fear that the rules governing the market may change, it is critical that EPA finalize the market rules as soon as possible. Congress and EPA must also do what they can to avoid changing the ground rules of the market. The fear of fundamental change in the rules governing a market can freeze trading activity.

Finally, financial benefits of trading must persist after the costs of regulations and taxes are taken into consideration for trading to grow. Several utilities who are in a position to sell allowances have told us the most significant barrier holding up allowance trading is the federal tax policy. Because the Clean Air Act amendments are silent regarding tax policy for emission allowances, IRS considered the issue and devised

tax rules that are likely to dampen trading, and increase the overall cost of complying with the law.

Currently, utilities that sell original-issue emission allowances -- that is, those utilities who have made extraordinary emission cuts -- are taxed at 100% capital gain on the revenues received from sales. This occurs because the allowances that were allocated to them are treated as "zero basis," an interpretation which implies the allowances allotted by law were essentially an unrestricted gift. However, utilities must make significant expenditures to cut emissions in order to be in a position to sell allowances. While these expenditures are written-off for tax purposes over many years, the revenues from selling allowances are taxed immediately.

The Acid Rain provisions of the CAA put a major cost burden on the electric utility industry to comply with new, tightened emission standards. There is no indication from Congressional deliberations that Congress intended the law also to be a new source of federal revenues. The allowances issued to utilities were part of an overall package that in fact levied massive cost increases on utilities and their ratepayers. The allowances were simply not an unencumbered gift. As it stands, a utility selling an allowance for, say, \$200 faces capital gains tax on that full \$200, regardless of the amount of money spent to free up the emission allowance for sale. Because the capital gains tax leaves the seller with only \$132 after federal taxes, the utility may be unwilling to sell the allowances.

As a result, because some utilities will be unwilling to sell, other utilities will instead be forced to pursue other higher cost compliance options rather than taking advantage of the potential sellers' ability to cut emissions at lower cost. Obviously, the market for allowances is also stifled.

The allowance market mechanism is intended to send a positive signal: if you clean up the environment, you will get a financial reward. That incentive is at the heart of the shift from inflexible regulation to market-based regulation. Current tax policy reduces the financial reward that was to be provided to those who cut emissions the most, and who could do so at lower cost.

Because this is creating such a disincentive, the Chicago Board of Trade is currently exploring possible tax policy alternatives with the electric utility industry. Our goal is to find a policy that is fair, reasonable, and consistent with other tax regulations. It must also reduce the disincentive to trade allowances that is embodied in the current tax policy, and remove the current distortions that are absolutely counter to the spirit of the law. While the allowance program encourages utilities to compare the cost of all compliance options -- switching to cleaner fuels, installing pollution scrubbers, inducing energy efficiency, or hiring others to make extraordinary emissions cuts by buying allowances -- the current tax penalties encourage utilities to keep allowances for in-house use. This reduces the possibility of buyers using the allowance purchase option, and this means the market will not reach its full potential to cut the cost of lowering emissions.

The sulfur dioxide allowance program is being watched around the world as a model for a variety of other market-driven environmental policies. The tax treatment currently applied to the market has the potential to limit the success of this innovative program.

For almost all the trades completed to date, extraordinary circumstances existed that mitigate the effects of a harmful tax policy or the absence of regulatory guidance. Those circumstances include sales by a municipality (which are tax exempt), sales by utilities that had already made extra emission cuts to comply with State law (Wisconsin) and were compelled to rebate the sales proceeds to their ratepayers, and like-kind exchanges of allowances, which mitigate the effect of federal taxes.

In circumstances where the effects of existing tax rules are mitigated, owners of excess allowances have made sales. This clearly suggests that modification of the current tax treatment would remove a significant barrier to trading.

Conclusion

To us, it is clear that market-based solutions work. The CBOT hosts a steady stream of visitors from eastern Europe, China, the former Soviet Union and other countries which are trying to develop market economies. They come to the CBOT because they have learned a key lesson: a mechanism for getting good price information is a necessary foundation for a market system. The Chicago Board of Trade offers a forum for generating prices that accurately reflect market conditions, and the market we plan

to offer will generate this needed foundation for the sulfur dioxide allowance market.

We feel that market-driven environmental policy can be extended both globally and locally, and we are seeing efforts on those fronts right now. In Los Angeles, the local emissions trading program will help to significantly lower the cost of reducing industrial pollutants. On the world stage, an allowance trading program to help lower the cost of cutting greenhouse gas emissions is being considered. These programs and others are using the sulfur dioxide allowance market as a model. The Chicago Board of Trade is happy to be a participant in the sulfur dioxide market, and is eager to work with the other market-based environmental programs now being developed.

Appendix A

EPA ALLOWANCE AUCTION RESULTS

I. TOTAL ALLOWANCES OFFERED FOR SALE

Spot auction: 50,000 (EPA Reserve) + 95,010 (offered) = 145,010

Number of Offers: 16 Minimum Price Range: \$10 - \$1,900
 Avg. Minimum Price: \$439 (w/o \$1,900 offers)

Advance auction: 100,000 (EPA Reserve) + 30,500 (offered) = 130,500

Number of Offers: 35 Minimum Price Range \$200 - \$449
 Avg. Minimum Price: \$273

II. SPOT AUCTION RESULTS (1995)

Total Quantity Bid: 321,354	Total Auction Proceeds: \$7.8 million
Allowances Sold: 50,010	Price Utilities Will Receive
	Per Allowance Withheld: \$156
Highest Bid: \$450	Successful Bids: 36
Lowest Bid: \$0.26 (not valid)	Unsuccessful Bids: 70
Lowest Successful Bid: \$131	Total Bids: 106

III. ADVANCE AUCTION RESULTS (2000)

Total Quantity Bid: 283,406	Total Auction Proceeds: \$13.6 million
Allowances Sold: 100,000	Price Utilities Will Receive
	Per Allowance Withheld: \$136
Highest Bid: \$310	Successful Bids: 30
Lowest Bid: \$0.01 (not valid)	Unsuccessful Bids: 35
Lowest Successful Bid: \$122	Total Bids: 65

IV. WHO BID IN THE AUCTIONS

	Bidders		Purchasers	
	<u>Spot</u>	<u>Advance</u>	<u>Spot</u>	<u>Advance</u>
Utilities	52%	32%	95%	99%
Brokerage Firms	8%	12%	5%	1%
Public Interest Groups	6%	9%	<1%	<1%
Private Investors	20%	38%	<1%	<1%
Other	14%	9%	<1%	

Appendix B

ALLOWANCE TRANSACTIONS REPORTED TO DATE

Seller	Buyer	Allowances	Total Cost	Cost/ton
Big Rivers/Henderson Am. Muni. Pwr.-Ohio	4,384	\$898,720	\$205	
Big Rivers/Henderson Centre Financial	150,000	\$26.8 million	\$179	
Wisconsin Electric Pwr. ¹	Illinois Power	75,000	undisclosed	undisclosed
PacifiCorp	Illinois Power	35,000	undisclosed	undisclosed
Central IL Pub. Service	Illinois Power	80,000	undisclosed	undisclosed
Long Island Lighting ²	AMAX Energy	undisclosed	undisclosed	
Wisconsin Pwr. & Light	Duquesne	15,000	\$4.14 million	\$276
Wisconsin Pwr. & Light	TVA	10,000	\$2.5 million	\$250
Alcoa Corp.	Ohio Edison	25,000	\$6.2-8.8 mill.	\$250-350

¹ Wisconsin Electric Power (WEPCO) will supply Illinois Power a five-year stream of 75,000 Phase 1 allowances. In return, Illinois Power will supply WEPCO with a 10-year stream of 75,000 allowances in Phase 2.

² Long Island Lighting (LILCO) sold AMAX an option to purchase Phase 1 allowances.

Source: *Compliance Strategies Review*, August 30, 1993

**Statement of
Carlton W. Bartels, Director
Cantor Fitzgerald Environmental Brokerage Services
before**

**The Senate Committee on Environment and Public Works,
Subcommittee on Clean Air and Nuclear Regulation**

**Implementation of the Acid Rain Provisions of
Title IV of the Clean Air Act Amendments of 1990**

I wish to thank the subcommittee for this invitation to review the implementation of the Federal Acid Rain Program. Over the course of my career I have been involved in environmental regulation of utilities from several different perspectives--as a utility planning engineer, as the Director of Regulated Utility Planning for the State of Vermont, as a senior scientist at the Tellus Institute for Resource and Environmental Strategies and, currently, as the Director of Cantor Fitzgerald Environmental Brokerage Services. (Vitae attached). It is this final position in which I appear today, though my comments reflect the full breadth of my experience.

I wish to touch upon four broad subjects in my testimony: 1) the success of the Acid Rain provisions; 2) the status of the market, including Cantor Fitzgerald's participation in developing a viable marketplace; 3) the impediments currently affecting implementation; and 4) the lessons learned from the Acid Rain program to inform the design of future programs.

Successes of the Acid Rain Program

I have no doubt that the Acid Rain Program will succeed in achieving the legislated reductions in the Acid Rain precursor, sulfur dioxide (SO₂), at a significant savings over traditional command and control regulation. Even under the worst case scenario to which I attach any probability, the program represents a great improvement over more traditional regulatory tools. The greatest benefits derived from the program are: 1) achievement of environmental goals (SO₂ reductions); 2) cost savings; 3) decreased regulatory intervention; 4) decreased litigation; 5) improved rationalization of resources; and 6) enhanced innovation.

SO₂ Reductions. The legislated reductions are well underway to being achieved. Others appearing before you today undoubtedly have better information on the quantification of these reductions than I. My observations are derived only in part from these reports. They are also informed by my staff and my continual discussions with over

one hundred involved utility companies. I believe that the current path the industry is on will lead to significant over-compliance in Phase 1. From an environmental perspective, this may be seen as an unexpected windfall, though it does extract an economic price.

Cost Savings. The trading program has already allowed the electric utility industry to save considerable funds in achieving the prescribed SO₂ reductions as compared to those from any realistic centrally administered command and control program. Five years ago, regulatory directives were forcing utilities to spend \$1500 per ton of SO₂ removed on the margin. Today, the cost of each incremental SO₂ emission, as reflected in the price of an emission allowance, is less than \$200--a decrease of a full order of magnitude. Two important reasons for this drop are that: 1) the new program is based upon a different concept of equity and fairness; and 2) it allows decentralized decision making.

The equity paradigm is at the heart of any regulatory system. It defines who is responsible for maintaining or improving environmental quality. Command and control regulation embodies two equity considerations that run counter to economic efficiency. One is that a uniform technological prescription is fair; in other words, it is fair if equivalent sources must employ the same pollution control equipment or emission standard. This consideration fails to recognize unique characteristics of specific sources (e.g., availability of land); fails to capture economies of scale (it may be less expensive to clean one plant to 90%, than two identical plants to 45%); and stifles innovation.

The second equity consideration is "grandfathering." New standards are generally not applied retroactively. This has the adverse effect of keeping many of the least expensive emission reduction opportunities out of the solution. Grandfathering creates a barrier against upgrading or improving an existing facility in any significant manner that may threaten the grandfather status, making the unit subject to significantly tighter emission control standards.

The removal of grandfathering has created a lion's share of the savings to date. By creating a level playing field for the evaluation of all emission reduction options, each utility is encouraged to optimize compliance across all the generating units it controls. This will lead to invisible internal trades which will constitute the major use of the trading aspects of the Allowance system. It should be noted that this is a unique condition of the utility industry where one company controls a network of point sources from which reductions can be attained. The success of future trading programs imposed on other industries will rely to a much greater extent upon the emergence of a robust open intercompany trading system.

Decentralized decision-making is the primary engine of economic efficiency in the capitalist system, as demonstrated anew in this program. Command and control is a centrally planned strategy for environmental quality. It removes the selection of options from those on site, who have first hand information, and places it in a bureaucratic

organization or a political arena. Even under the most benign circumstances the bureaucratic or political solutions will be less efficient.

Decreased Regulatory Intervention. The program decreases the review and approval of specific compliance decisions, though admittedly this freedom comes at the price of significant reporting requirements. Overall this is a very good trade-off. Removing the regulatory approval of specific decisions greatly decreases the time lag between option assessment and implementation.

Decreased Litigation. Admittedly, the new program is not free from controversy and litigation. However, the current disputes are very pointed, and arise from the initiation of a new type program instead of a myriad of challenges on individual compliance actions. This is an artifact of removing regulators from specific compliance decisions. Once these preliminary challenges are resolved the program itself should operate with a minimal level of opposition. Compliance in this program is largely a black and white issue--are there enough emission allowances in a unit account to cover that unit's emissions? By removing the gray area "where reasonable persons may differ" of interpreting regulations, the new program has removed much of the potential for litigation.

Improved Rationalization of Resources. Allowing the utility industry to optimize emission reductions across all units has caused utilities to evaluate solutions they previously had little or no incentive to evaluate, and in some cases even had an implicit disincentive. In particular, the program has caused utilities to consider emissions as part of their fuel purchasing strategy, the intended result being an improved use of our fuel resources. This is a two edged sword because it will create dislocation in the coal industry causing unfortunate difficulties for individual mines and miners. However, overall it should foster a better use of both capital and labor resources by both the utility and the fuel industry.

Enhancing Innovation. By not prescribing and locking in a particular "technological solution" to reduce emissions, as BACT and RACT do; the new program encourages the market to seek out ever more efficient emission reduction opportunities. This is the key to ensuring the on-going health of any industry, and should be recognized as one of the major long-term advantages to this particular program, as well as market-based approaches in general.

Market Development

The development of an allowance trading market is progressing steadily. Considering the utility industry and the design of the program, I believe market development is only marginally behind schedule. This setback is a result of two factors--the continued delay in implementing the Allowance Tracking System (ATS), and the proposed change to the substitution rules suggested by the EPA this past July. Of these

two, only the ATS remains as a significant impediment, which I explore in the next section of my testimony. The EPA's proposed rule change did cause the industry to temporarily retrench over the summer. Fortunately, the industry appears to have recognized that the substitution rule change is an isolated situation, and not a foreshadowing of continual intervention by the EPA.

Even without these impediments a truly successful trading market requires careful design and implementation. Cantor Fitzgerald is in the business of facilitating trading in markets that meet the needs of its customers. One measure of Cantor Fitzgerald's success is that we currently transact over \$7 trillion in financial assets annually.

The following introduction to my article "SO₂ Allowance Trading Made Simple: Cash-Forward Settlement Fits Today's Industry" explains why it is critical to tailor the trading market to the electric utility industry:

"Title IV of the Clean Air Act Amendments of 1990 created a system of tradable pollution rights which promise to achieve the country's acid rain reduction goals at a savings of billions of dollars compared to traditional means of environmental regulation. The ultimate success of this program depends in large part on the utility industry's capacity to integrate a new type of transaction into their planning, decision-making, and cost recovery mechanisms. The breadth of this challenge, coupled with the conservative nature of utility planners, executives, and regulators, is one reason exploitation of allowance trading has been slow to develop.

Emission Allowances are an ideal commodity. Within a particular vintage, each allowance represents an identical good with no delivery problems. As such, allowances lend themselves to trading on a national scale.

Electric utilities, however, rarely participate in national commodity markets. Instead, they trade with a limited number of partners for goods with a high level of specification, e.g., equipment, fuel, power. In addition, cost regulation strives to eliminate inter-temporal subsidies among consumers promoting transactions that occur closest to the time of actual need. Consequently, the industrial and regulatory cultures are geared toward highly-structured forward-settling contracts. The result is an existing regulatory structure containing significant impediments to the rapid wide-spread utilization of standard centralized market forms (i.e., spot cash, and futures contracts). Without a more immediately useful market design, the advantages offered by nationwide trading may be lost to less efficient, but more familiar, bilateral contracting.

A hybrid market structure, combining the efficiencies of a centralized marketplace with the forward settlement structure of a bilateral contract, offers the best of both worlds. **Centralized trading** maximizes trading efficiency, and savings, while simultaneously reducing risk to utilities. **Cash-forward settlement** is an immediately usable structure, thoroughly integrated into the existing planning, decision-making and regulatory structure

of the industry through its long time use in purchased power and fuel contracting. Such a trading system has recently been introduced by the brokerage firm Cantor Fitzgerald."

This article explores in detail the specific needs of the electric utility industry and is attached hereto with the permission of *The Electricity Journal*, which expects to publish this article in its November edition.

The central trading market described in this article is one of two major elements in Cantor Fitzgerald's efforts to assist market development. In addition, we will periodically hold a proprietary Market Clearing Auction, specifically designed to allow utilities to maximize the benefits of the trading program in a low-risk manner. Our Market Clearing Auction is a computer assisted "smart auction" that enables utilities to optimize their compliance plans in a manner consistent with the Least Cost Planning paradigm utilized by many utilities and state regulatory commissions. The Cantor Fitzgerald Market Clearing Auction is explained in detail in the article, "Clean Air, Clear Market, Making Emissions Trading Work: The Role of a Computer-assisted Auction" published in *Public Utilities Fortnightly*, June 15, 1993, attached hereto.

Part of our rationale in developing this auction mechanism was to help initiate the allowance market; that is, to bring definition and price discovery to a market that had only limited trading. Incidentally, we intend to use a specially adapted version of the auction for this purpose in the South Coast Air Quality Management District's new Regional Clean Air Incentives Market (RECLAIM) in January, 1994, provided the RECLAIM program is adopted on schedule.

With regards to our SO₂ allowance market, we were unfortunately forced to postpone holding our auction this summer due to the combined effect of the lack of an Allowance Tracking System and the proposed rule change. We are currently considering rescheduling the auction for the first quarter of 1994 as a result of requests from our utility customers.

It should be noted that Cantor Fitzgerald's Market Clearing Auction bears virtually no similarity to the EPA sponsored auction mandated by the Amendments. The EPA auction was designed to guarantee a limited source of allowances at "market prices". While the EPA auction had been put forward by some as a mechanism for price discovery and market development, it was ill designed to serve this function. This is in no way a criticism of the EPA or the auction. In fact, such mechanisms are best left to the private sector to develop and implement. As we speak, the private sector is pursuing these efforts in various ways. (See Wall Street Journal article of August 24, 1993, attached hereto). It would be a distraction, and even a threat, to these private sector efforts for the EPA to attempt to undertake a more aggressive market development function.

I strongly believe that Cantor Fitzgerald's market development efforts will prove to be a key element in capturing the full efficiency of this market. Central cash markets based upon immediate payment have very limited appeal from either a business or regulatory

perspective, as I have explained in the attached articles. Since Cantor Fitzgerald & Co. is a Member of the Chicago Board of Trade and the Board of Trade Clearing Corporation, we would be pleased to see a healthy futures market develop; however, a futures market requires time to develop and be embraced by the utility industry. We see our efforts as the foundation for such additional development in the SO₂ allowance market and as a template for other markets in tradable emission rights.

Impediments Affecting Implementation

In the previous section, I alluded to two of the major impediments to market development--continued delay of the ATS, and the proposed rule change. Additional confusion was added by the inability to perfect a security interest, the phased market design, lack of regulatory clarity by state commissions, and ironically, the EPA sponsored auction.

Allowance Tracking System. The lack of an ATS has prevented the actual transfer of allowances between parties. With millions of dollars involved in a medium size transaction, it is easy to understand why the ability to transfer title of the purchased allowances is important. While the lack of transfer capability will not prevent trading in its entirety, it greatly hampers the development of the most efficient market forms. It is essential that this problem be resolved as quickly as possible, if the program is to achieve its potential.

We have designed our trading system to be sufficiently flexible to permit the execution of cash-forward transactions prior to the ATS's coming on-line. Other elements of our program, including immediate settlement transactions and the Market Clearing Auction, are significantly more dependent upon the ATS, and its continued absence has caused us to postpone implementation of that segment of our plans to service this new market. Even with our cash-forward settlement, the lack of an ATS greatly increases the burden of introducing the central trading concept to an industry that proceeds as cautiously as the electric utility industry.

Cantor Fitzgerald has been actively seeking a solution to this problem, and stands ready to contribute to any effort that will assist in the ATS's development.

Inability to Perfect A Security Interest. The inability to perfect a security interest in a streamlined fashion creates impediments similar to those arising from the absence of the ATS. I have attached a memorandum prepared by the law firm Schiff, Hardin and Waite which provides a detailed discussion of this issue, including a proposed solution.

The impediment created by the difficulties in perfecting a security interest are less pressing than those caused by the absence of the ATS. Actual indisputable possession of allowances does not become critical until January 1996, the first date allowances must be

in unit accounts for purposes of compliance. Thus, we have the ability to suffer through the more time consuming elements of securing interests in allowances as a result of trades that take place during 1994. Nonetheless, it is still in the market's best interest to resolve this issue in a timely manner, so the immediate settlement cash market has the opportunity to mature prior to 1995.

Proposed Change to the Substitution Rules. Earlier in my comments, I described the chilling effect that the EPA's proposed change to the substitution rule has had on the market over this past summer. Fortunately, discussions with our clients indicate that the newborn market is already showing signs of recovery. I would emphasize, however, that the market's recovery is based upon the perception that the proposed rule change was an isolated instance. The damage from a second proposed change would be exponentially greater, and recovery less assured.

I strongly suggest that no further rule changes be proposed which in any way threaten utilities' expected receipt of allowances or the execution of trades being made. Any such changes to the implementation of the program, other than those made to facilitate transactions, must be considered as a last resort and only if inaction will cause definite irreparable damage. The key to successful market development is consistency of the implementing regulations.

Phased Market Design. The two step phase-in of Title IV created a multi-year gulf between the decision making epochs of potential allowance buyers and sellers. Phase 1 embraced the 110 dirtiest plants, Phase 2 the remaining cleaner plants. Roughly speaking, Phase 1 units with their large emission reduction potential are the market's natural sellers. The Phase 2 units represent most of the market's buyers, as well as a significant number of sellers.

The problems for market development arise because Phase 1 utilities had to make their compliance decisions with no real market price information--only projections. Unfortunately for many utilities the actual market price of allowances is considerably less than these studies predicted. As a result, certain companies adopted compliance strategies which were more expensive than necessary.

In addition to creating some unnecessary expenditures, this mistaken expectation has resulted in hampering market development. Companies that spent more per ton of SO₂ abatement than current allowance prices dictate are unlikely to subject themselves to criticism by selling allowances at a loss. Instead, these companies are waiting for allowance prices to strengthen before entering into the market.

Withholding allowances from the market may have the adverse effect of further weakening prices. Certain marginal buyers--those that would buy at today's prices, but cannot find willing sellers--will not rely on the market to assist compliance. Instead, they will make costly alternative decisions as if a market did not exist. Bolstering the surplus

further weakens the price. Paradoxically, the risk averse "sell later" position compromises the defensibility of the company's compliance decisions.

This situation is already embedded into the current program design as a result of other considerations. Further degradation of the market should be prevented by the development of a healthy transparent secondary market. Hence this issue, while not demanding attention on its root cause, contributes to the urgency of addressing the other barriers inhibiting the development of the secondary market.

State Regulation. It is undeniable that the uncertainty of state regulatory treatment has had a chilling effect on market development. This issue does not lend itself to simple solutions, but rather envelopes virtually the entirety of electric industry operations and regulation. Intervention on the part of the EPA or Congress would accomplish little toward facilitating market development and would most likely paralyze market development from the moment such a plan was announced until it was completed.

The best way to minimize the impact of regulatory uncertainty is for a utility to efficiently and demonstrably manage its allowance portfolio. Cantor Fitzgerald is attempting to facilitate this behavior by lowering the barriers to participating in an efficient allowance market. (See Supplementary Materials for detailed explanations.)

EPA Auction. The EPA sponsored auction was designed to ensure a source of market priced allowances for Independent Power Projects and smaller utilities. However, the design of the auction itself limits its usefulness toward this end. Very few investors are likely to commit the hundreds of millions of dollars to build a power plant that relies on the repeated successful purchase of allowances at a series of annual auctions, nor would such a company be interested in purchasing the necessary allowances for cash today.

Fortunately, the market has already demonstrated sufficient liquidity to provide the number of allowances required to run a new power plant. (My comments earlier on the current lack of liquidity of the market considered trading several orders of magnitude larger than the needs of the entire IPP market.) As a result the EPA sponsored auction has already outlived its usefulness.

The auction does not represent a significant market barrier, but rather an unnecessary distraction to market development creating more confusion than clarity. At best, it represents an unproductive, albeit diminutive, transfer of wealth among utilities and their ratepayers. At worst, it unnecessarily compounds utility compliance planning at a time when utilities are trying to develop allowance portfolio management skills.

The usefulness of the EPA auction cannot be judged by the level of participation it attracts. The EPA auction will never go undersubscribed because there is no minimum price associated with the allowances withheld. Bottom feeders will always be available to buy off the withheld allowances. Instead, the EPA auction should be evaluated in terms of its original purpose as an allowance safety net, and phased out when it is no longer

necessary. In the first auction held, allowances appeared to go to any party except those parties for which this safety net was intended.

Lessons Learned

There is but one grand lesson to be learned from the implementation of the SO₂ trading program, with several sub-lessons: design the program cleanly and let it operate with minimal interference. The best market based programs will be ones where the legislators and regulators clearly set forth the rules, and step back to referee the game. The worst are those in which regulators are active participants.

The major benefit of a market based program is that it creates a situation in which individuals take actions that are in their self-interest within the confines of the stated public policy. In the Acid Rain Program, the emissions cap was the imposed policy decision, achieving it in the lowest cost manner is the self-interest of the emitters. The major market impediments I have identified in the SO₂ market, arise from the continued participation of regulators into the marketplace.

The problems created by the on-going lack of the ATS are examples of where the success of the system is contingent on the EPA's finishing the implementation of key program elements. In the future, such problems can be avoided by ensuring sufficient funding for the start-up and continued operation of the program.

The administrative costs of the Acid Rain Program represent an insignificant portion of the savings that utilities and their ratepayers will derive from its successful implementation. The losses they are incurring due to continued delay, while hard to quantify, are likely to be larger than the costs would have been to start-up the program cleanly. Consequently, it is in the self-interest of the participants to avoid these delays, even if they must invest part of the savings to do so.

Future programs should be self-supporting. Any program in which the administrative costs are not readily supported by the savings to participants should be reexamined.

The problems created from the revised substitution rule were created by the reintroduction of regulators into the implementation phase of the program. It is naive to believe that any program of this complexity can be put cleanly in motion without any snags. In this instance, the EPA has contained the damage by emphasizing that this intervention was unique. The lesson for the future is that such interventions should be made judiciously, and regulators must resist the desire to fine tune the programs.

The phased-in design created a very complex market structure which will also result in a loss of some economic efficiency. Initiation of a new program is best done in one step.

Summary

Overall, the Acid Rain Program shows great promise. In retrospect, a few changes would have improved the program, but none of the problems facing the program appear overly significant or without solution. While this new paradigm of regulation is not universally applicable, the potential benefits are great in situations where it can be applied. In those cases, the best role of the regulator is that of referee and not an active participant.

NOTE: Attachments to this statement have been retained in committee files.

PALMER
BELLEVUE
CORPORATION

TESTIMONY OF
GERALD M. KEENAN

BEFORE THE

SUBCOMMITTEE ON CLEAN AIR
AND NUCLEAR REGULATION

OF THE

UNITED STATES SENATE

REVIEW OF IMPLEMENTATION OF
THE ACID RAIN PROVISIONS
OF TITLE IV OF THE
CLEAN AIR ACT AMENDMENTS OF 1990

OCTOBER 21, 1993

WASHINGTON, D.C.

TESTIMONY OF GERALD M. KEENAN
BEFORE THE
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR REGULATION

OCTOBER 21, 1993

WASHINGTON, D.C.

Chairman Lieberman, Senator Simpson, Honorable Members of the Subcommittee. I greatly appreciate the opportunity to testify today regarding the success of the Acid Rain provisions of Title IV of the Clean Air Act Amendments of 1990 and its implementation since passage in November of 1990.

The events of past three years have shown Congress' wisdom in choosing market-based approaches to environmental compliance over the traditional command and control approaches. By any method of measurement, the Acid Rain Allowance System has already met, and perhaps exceeded, the goals of its designers. At the risk of oversimplification, these goals were **more, better, faster and cheaper**.

- **More** SO₂ reductions than had ever been sought throughout more than 10 years of proposals to reduce sulphur dioxide emissions from power

Palmer Bellevue Corporation

plants.

- **Better** results by allowing utilities the flexibility to make their own choices about the methods of reduction, without favoring particular technologies or fuels.
- **Faster** reductions by creating incentives for reductions made prior to the statutory deadlines.
- **Cheaper** costs than if Congress had approved prescriptive methods which sought to mandate particular technologies or fuels.

The winners? The American people, who will benefit from more SO₂ reductions, cheaper electricity, and a more healthy environment than would have been possible under a command and control compliance regime..

The lessons learned? Market-mechanisms do work, work well, and should be the focus of the efforts of Federal and State regulators who are seeking to deal with seemingly intractable environmental problems, such as the ozone non-attainment problem facing many major urban centers and the Northeast Ozone Transport Region. Some states, including Illinois, have already begun to develop and implement market-based methods to meet the ambitious ozone attainment goals established by Title I of the 1990 Amendments.

The Acid Rain Allowance System -- Measures of Success

How can we gauge the success or failure of a program as ambitious and far-reaching as Title IV, when the first reductions are not required for another fourteen months? Fortunately, the market based mechanisms and the interest they have created in some of my colleagues on this panel, and many others, provide us with a pretty accurate picture of Phase I compliance activity and the market prices for SO₂ allowances.

Probably the first measure of success is whether utilities will meet their reduction targets for Phase I. Based upon all the information I have reviewed, it is clear that the utilities will not only meet, but substantially exceed, the reduction targets established by Title IV. In recent seminar which I organized for a Midwestern utility, two leading economists who have closely tracked the compliance decisions made by utilities each concluded, independently, that Phase I utilities will enter Phase II with between 4 and 6 million allowances banked. Each of those allowances represents a ton of sulphur dioxide emissions which is forecast not to be emitted into the atmosphere during Phase I. Overall, their forecast is that Phase I emissions will be one million tons less per year than permitted by law. This is a great success.

The second measure of success is the cost of meeting the reduction goals set by Congress. Again, all the available information indicates that the costs of Phase I compliance are far lower than anticipated by even the most ardent advocates of the Allowance Trading system in 1990. A review of most of the predictions of allowance values made in Spring and early Summer of 1990 reflects forecasted Phase I allowance values of \$300 to \$700 per allowance, with most forecasts in the \$400 to \$550 range. Although the availability of market pricing information is somewhat sketchy, it seems that the current price for the 1995 vintage of Phase I allowances is about \$175 to \$200 per allowance. A recent reported transaction involving the City of Hendersonville, Kentucky is said to have occurred at a price of about \$180. I am sure that my colleagues from the Board of Trade and Cantor Fitzgerald can speak with greater precision about the market and the expected prices.

This differential is remarkable. The prognosticators simply incorrectly forecast how quickly the market would work and how rapidly utilities would understand and embrace this new manner of environmental compliance. The environmental compliance decision process was transformed from a one time choice of hardware into a dynamic process where there were significant financial gains to be made from making right decisions, and significant financial penalties for wrong decisions. Those seeking to provide compliance options, whether technological, fuel or financial, were quickly forced to reduce their claims to a very simple and understandable equation -- what was the effective cost of each compliance option, calculated on a dollars per

allowance basis. Lower than expected prices for Western low sulphur coal and transportation drove the market. But the market based approach provided benefits for all utilities, even those who purchased scrubbers. The availability of options allowed those who chose scrubbers to drive much better deals than if those same scrubbers had been mandated by Congress. Margins tightened, prices fell, and electric customers in the Eastern United States were big winners.

So effective were market forces that some utilities have experienced negative compliance costs. Simply put, for them the total costs of generating electricity while reducing SO₂ emissions were less than they had been to emit SO₂ at significantly higher levels. Hard to argue with these kind of results.

A third measure of success is the manner in which the Acid Rain program has been implemented by the Environmental Protection Agency. In spite of the initial misgivings and skepticism which greeted the creation of the Acid Rain Advisory Committee, the USEPA -- led by then-Administrator Bill Reilly and Assistant Administrator for Air and Radiation Bill Rosenberg -- were intent on preserving, in implementing rules, as vigorous a market approach to compliance as possible. EPA clearly listened and learned from the 45 members of the Acid Rain Advisory Committee and to the many observers who devoted time to the process. The staff of the Acid Rain program did heroic work in developing information and draft rule proposals for review and discussion by ARAC members. Interestingly, it was the EPA

staff which continually reminded those involved in the process who were tempted to seek governmental intervention in the market for emission allowances that the predicate for the compliance process is a free, unfettered market. And the results of their efforts speak for themselves.

Rather than still being fought over endlessly by utilities, public interest groups and others in Federal Appeals courts across the country, virtually every important issue regarding the Acid Rain provisions (excepting the monitoring and NO_x issues) were resolved on a collaborative basis through the ARAC process. I believe the results achieved through the ARAC process are better than would have resulted from the traditional process, in which the agency develops rules without significant input from interested parties, issues draft rules for comment and then deliberates with itself, again in secret, before issuing final rules, beginning the inevitable round of court challenges.

One of the great breakthroughs of Congress's approach to the Acid Rain Allowance system was the implicit recognition that government doesn't have all the answers and that implementation of SO₂ reductions could best be handled by markets, not bureaucrats. Markets thrive on free flows of information and the exchange of ideas. EPA, in developing and implementing the ARAC process, created a marketplace for ideas about the rulemaking process which has served the utility industry, the environment and the country very well. It is a model which EPA and

other agencies should carefully consider in the process of looking how government might be reinvented. It would pass any cost-benefit test with flying colors.

The fourth and final measure of success is the manner in which the utility industry is responding to the market-based approach to compliance. The market-based compliance system adds a considerable amount of uncertainty for utility managers and regulators more accustomed to monopoly and "command and control" than to the rigors of competitive markets. At the same time, these uncertainties are precisely the type which can serve to elicit invention and creativity, whether technological, financial or informational. It is also a near certainty that regulators' attempts to direct the flow of compliance toward pre-selected options rather than permitting the market to function, will not only undermine creativity but also increase compliance costs.

For the most part, utilities have responded to the challenges of the market-based system very well, understanding that the Acid Rain Allowance system requires a more comprehensive approach to compliance decisions than in a command and control system. The brilliance of the allowance and trading system -- whether one subscribes to the notion that SO₂ emission limits were needed or not -- is that it promises a least-cost approach which will not rely on the government prescribing technologies or fuels. Nor does it rely on government efforts to achieve an overall limit on emissions by intense regulation of each and every emitting source.

Utility managers have responded to the challenges of the SO₂ market system. Their understanding of the compliance options and trade-offs available to them are the reason compliance costs have been driven so low. Rather than seeing themselves as victims of legislative environmental excess, they have worked quickly to understand and exploit the leverage which the market provided them. Although many, including not just a few senior utility executives, did not believe that utilities could respond to the challenges of the marketplace, the doubters were clearly proven wrong.

The Clean Air Act Amendments seem to have found a reasonably efficient way of internalizing into the cost of electric power production the social cost of SO₂ emissions. Presumably, if the government can avoid its traditional tendency to distort price signals, allowances should trade at a price approximating the marginal cost of avoiding the emission of a ton of SO₂, which will vary over time and from utility to utility. A rigorous adherence to efficient pricing and to the signals they send will be the key to the generation of the most valuable economic opportunities to emerge from the Clean Air Act.

The principles of internalizing environmental costs into prices, so clearly included in the Acid Rain Title, can serve as an important model for other areas of compliance, whether overseen at the national or the state and local levels. If permitted to operate, we should expect that the SO₂ model of social cost internalization through market means will be emulated over time as efforts increase to

remedy other perceived environmental problems. A reinvigorated environmental ethic may become as much a driving force in the energy markets as growth in demand and international relations affecting the supply and price of oil and other commodities.

By all indications, the Acid Rain Allowance program has been successful in reach and perhaps even exceeding the goals set forth by Congress in 1990.

STATE REGULATORY ISSUES

One of the important issues in the framing of Title IV was a provision which prohibited Federal intervention in state public utility regulators' treatment of allowances and utility compliance costs for ratemaking purposes. This provision, while an important recognition of the primary role accorded the States in economic regulation of retail electric rates, means that a variety of important economic regulatory issues are left to the States. This means that the States have both flexibility and responsibility. Each State can have a dramatic impact on the choices made by its utilities and on the efficiency and cost effectiveness of those choices. If a State is not careful, it may rob its electric customers of the marketplace benefits of the Acid Rain Allowance system.

A key question, then, is how to identify sources of uncertainty for utilities and regulators, and then develop ways of coping with these uncertainties. This question goes well beyond the theoretical and bears on genuinely practical problems which

regulators and their utilities now face..

Utilities operate on a simple premise in the effort to come into compliance with the Clean Air Act -- greater certainty and symmetry are preferable to uncertainty and a lack of symmetry in the way in which state regulators evaluate and provide for the recovery of compliance costs.

Getting to this certainty and symmetry has a number of dimensions.

- Above all other things, utilities will seek the timely delivery of well-defined decisions by their Commissions. Decisions by Commissions should coincide with the timing of important choices to be made by utilities in order to comply with Federal mandates.
- The most important clarification state regulators and policy makers can provide is the extent to which economics will govern the review of utility compliance plans or results, or whether other "socio-political" factors will be weighed as well. No doubt, such factors as the desire to promote the continued use of local, higher sulfur coals are likely to vie for consideration along with the rate impact on customers. Utilities are understandably concerned that the evaluation criteria will be vague and indefinite and that this lack of clarity will be combined with delays and

after-the-fact review. Such a combination of uncertainties will naturally propel utilities in the direction of choosing compliance options which afford the least opportunity for regulatory second guessing. In other words, rather than promoting utility selection of least-cost options, policy makers may end up actually encouraging utilities to opt for "least-risk" approaches.

- Utilities, and their regulators, need to decide whether they will attempt to deal with the myriad acid rain compliance plan permutations by using least-cost planning type review processes and whether they can, or will, accelerate the process in order to create timely certainty for utility decision making.

Some states have addressed these issues in the context of Phase I compliance planning. As we move towards Phase II permit filing deadlines, greater attention will be focussed on these issues, since more utility units will be covered and meeting the lower Phase II emission standard will engender more difficult decisions than utilities or State regulators faced in Phase I.

TRANSFERRING THE SUCCESS OF THE SO2 TRADING SYSTEM

One of the great successes of the Acid Rain Allowance program is the interest it has sparked in market-based solutions to environmental problems around the country. Congress' leadership has legitimized market-based solutions as viable means to meet the ambitious ozone attainment goals set forth in Title I of the 1990 Amendments and as possible solutions to other environmental compliance dilemmas.

In the past few weeks, we've been reading a lot about "reinventing government" as President Clinton has begun his attempts to slim down the size of the Federal government. In Illinois, led by the efforts of Illinois Environmental Protection Agency Director Mary Gade, we're focusing significant efforts on "reinventing" environmental regulation, especially as considerable resources are devoted to coming into compliance with the Clean Air Act Amendments of 1990. The State's focus has been on researching, testing and harnessing the forces of the free market to meet the ambitious ozone reduction goals contained in Title I of the 1990 Amendments. The Illinois EPA and the rest of the design team, which includes Commonwealth Edison Company, the Environmental Defense Fund, E³ Ventures and my company, are pleased with the results of our efforts thus far, and with the support which we've received from both the business and environmental community as we work through the many difficult issues which must be addressed.

Thomas Jefferson called the states "the crucibles of democracy", forging a whole new, radical approach to government...rule by the people, rather than by a sovereign. Initiatives on NO_x trading generated by states throughout the country should lead you to consider whether states have once again reassumed their roles as "crucibles of innovation" in the field of environmental protection. In order to meet the ambitious ozone attainment foals set forth by the 1990 Amendments, Illinois, as well as other states, is moving away from the prescriptive command and control methods of the past. In its place, we are trying to harness market forces and human creativity to find better and cheaper ways to meet the Clean Air Act goals. This is extremely important given the tough economic climate Illinois finds itself in and in a globally competitive economic marketplace.

Illinois' effort to develop a NO_x trading program results from a conclusion that traditional command and control methods just weren't going to get the State to attainment in the Chicago area by 2007. As you probably know, Chicago is one of 9 worst nonattainment areas in the country for ozone. There are a lot of emission reductions to achieve in a relatively short time. Past efforts at command and control regulation had led to years of litigation, mistrust between the business community and the IEPA, and the imposition by Court Order of a Federal implementation plan, but not attainment of the Federal ozone standard.

Having served at USEPA for 15 years, Illinois EPA Director Gade was well aware of the Illinois situation and sought a more productive and effective method of reaching the State's environmental goals. Director Gade's knowledge of the Acid Rain Advisory Group process to implement the market-based provisions of Title IV made her consider whether the same principles incorporated in the Acid Rain Allowance system might be applicable to the challenges Illinois faces in meeting the ozone targets in Title I. In the past two years, Illinois has worked hard at learning the dos and don'ts of using market mechanisms, testing some of the principles through the IEPA's very successful "Cash for Clunkers" pilot. Last fall, working with the Environmental Defense Fund, General Motors and seven large Chicago companies, the IEPA purchased over 200 high emitting, pre-1980 vehicles. After testing all the cars using the IM 240 procedure, IEPA projects that a full implementation of a "Cash for Clunkers" program would yield continued NO_x and VOC reductions at a cost of about \$2500 per ton. Compared to some estimated of \$3000-5000 per ton for reductions at stationary sources, a well-designed and run "Cash for Clunkers" program could be an attractive part of an overall compliance plan. With rave reviews from the public to supportive editorials in both the Chicago Tribune and Sun Times, IEPA is moving forward to make Clunkers a permanent part of Illinois ozone control strategy.

Director Gade then began focus on developing a workable NO_x trading system which would permit Illinois to both reach attainment and allow our industries to make

reductions at the least cost possible. Jobs and economic development are very important to the Chicago area. Threats of job losses, business closures and lost revenue from the imposition of new environmental mandates are real political impediments to reaching our environmental goals. Director Gade hoped that using a market-based approach would minimize costs to businesses and the resultant negative effect on economic activity. There was also hope that a market-based approach would unleash the creative forces in our local economy to maximize the lower cost NO_x reductions which a command and control system would miss. And, frankly, everyone hoped to avoid the long, acrimonious battles we have seen before in Illinois.

Creating such a system is no easy task -- dealing with ozone nonattainment is a complex matter both from an air quality and a programmatic perspective. If it was simple, the Country would have met the deadlines in the CAA of 1977 by 1982 - or 1987 - and we would have been focusing our energies elsewhere. While the SO₂ trading program has certainly served as an important ice breaker, there are some very significant differences that must be addressed for ozone related trading. For example, the ozone attainment demonstration involves very complex urban airshed modeling and emissions control strategies that, in turn, impact the design of an emissions trading program. Another complication stems from the requirements for reasonable further progress for NO_x and/or VOC emissions reductions. In our case, this means that Illinois' design must accommodate three RFP milestones as well as the final

attainment target.

Let me give you an overview of Chicago's NO_x emissions situation. According to the 1990 baseline inventory, the total NO_x emissions are 995.5 tons/day. Of this total, 26.5% (263.9 tpd) are from point sources, 54.3% (540.3 tpd) are from on-road mobile sources, 16.8% (167.5 tpd) are from off-road mobile sources and 2.4% (23.8 tpd) are from area sources. There are 415 major sources of NO_x emissions in the nonattainment area based on the criteria of potential to emit 25 or more tons per day of NO_x.

The draft NO_x trading proposal was distributed to interested parties in Illinois during the last week in September and was the focus of significant attention at a two day conference on emission trading in Michigan two weeks later. A day long workshop for emitters, government agencies and public interest groups was held on October 20, with additional consultation planned in the coming weeks. Copies of the draft proposal have been provided to the Subcommittee staff and are attached to my testimony.

Some of the significant aspects of the draft proposal are the following.

1. It guarantees measurable and verifiable emission reductions from all stationary NO_x sources in the Chicago airshed.

2. A cap is imposed on all major NO_x stationary sources, declining over time until attainment is reached.
3. The seasonality of ozone production is recognized -- reduction efforts are focussed in the ozone season, where they do the most good.
4. Flexibility and innovation are encouraged -- sources are rewarded for innovation and early reductions.
5. IEPA's regulatory focus will be sharpened and regulatory delays and resulting uncertainty should be reduced.
6. Lower costs should mean less negative effects on economic activity than under command and control.
7. Compliance will be easy to measure and penalties will be severe, and unambiguous.

Other States, including California, Massachusetts and Connecticut have also begun to seriously examine the efficacy of market mechanisms as part of the solution to their ozone nonattainment problems. Such timely action is going to be necessary if states are to stay on track for next year's attainment demonstration submittal. These

demanding schedules under the CAAA have put states in a parallel mode of operation of concurrently pursuing their clean air attainment strategy and market based mechanisms such as NO_x trading systems.

Congress and this Subcommittee can be very helpful to the States in their effort to develop least cost means of complying with the requirements of Title I. First, indicate your support of State efforts to develop market-based approaches to environmental compliance, especially to USEPA Browner and her staff. I am concerned that inflexibility at USEPA and unwillingness to permit programs which do not fit the command and control paradigm will stifle the States' attempts to explore new, effective and innovative approaches to environmental compliance.

Second, continue to provide States with financial support as they work at the development of these innovative approaches. The small amount of funding provided by USEPA to Illinois EPA has been critical in permitting Illinois to develop the NO_x draft NO_x trading proposal. If Illinois's NO_x trading proposal is only half as successful as the Acid Rain Allowance program has been, this "venture capital" investment by the USEPA will reap returns that would make the Michael Millikin of old jealous.

Thank you for the opportunity to testify before you this morning.

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Statement of
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before the
Senate Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Regulation
Thursday, October 21st, 1993

on
Issues being considered by public utility commissions
associated with implementation of the Clean Air Act Amendments of 1990.

Mr. Chairman and members of the committee, thank you for the opportunity to testify on the role of state public utility commissions (PUCs) in implementation of the acid rain provisions of the Clean Air Act Amendments of 1990 (CAAA). I would like to congratulate the committee on choosing to hold a hearing on such a timely subject. This is an issue which absorbed much of my time and attention and that of my colleagues in the ten years I served as a member of the Public Utilities Commission of Ohio, and three years as Chair of the Electricity Committee of the National Association of Regulatory Utility Commissioners (NARUC). My comments today, of course, reflect my own opinions, and do not necessarily represent the views of NARUC, the PUC of Ohio, or the Harvard Electricity Policy Group.

The success of the emissions allowance trading program is very important to meeting the goals of the Clean Air Act. It provides an unprecedented mechanism for achieving least-cost compliance by an industry that has been burdened in the past with expensive command-and-control environmental regulation, and it is a worthy effort to harness market forces to meet environmental policy goals - something which should prove useful in many other applications. State regulators have generally embraced the concept of allowance trading. The Ohio commission was the first to endorse allowance trading as part of the CAAA, back in January 1990. NARUC itself also issued a resolution endorsing trading later that year. There is reason to be optimistic that the market will in fact function as conceived, as parties grow more comfortable with the concept. It is very important however that Congress itself not do anything at this point to interfere with the trading program. One of the primary reasons there has been cynicism about the chances of developing a successful market was the fear that the government would change the rules in the middle of the program. It would be a terrible mistake to take legislative action at this point, because it would only confirm these fears. On the other hand, Congress can play an important role in monitoring the process and in urging federal agencies, the FERC in particular, to move ahead quickly with remaining clarification of administrative and regulatory rules for the trading program. The IRS has issued a ruling on tax treatment of allowances. The EPA has, of course, promulgated most of its rules. The FERC has issued accounting rules but as explained below, it has yet to act on a number of issues, the resolution of which is quite critical to the development of a robust market. All of these agencies, but particularly the FERC, have more to do to provide the basic infrastructure necessary for market development.

It would certainly be premature to make a judgment at this point in time as to the "success" or "failure" of the allowance trading program, for several important reasons. As you know, only 110 plants are affected by Phase I of the CAAA. Compliance at these plants involves the expenditure of substantial funds or perhaps even closure of some units. Phase II, however, will bring compliance requirements to more units, with more marginal compliance costs and requirements, for which utilities are more likely to find trading an attractive option.

The relative slowness in the market's development is hardly surprising. The allowance trading system imposed a market-based environmental compliance mechanism on an industry which has long been tightly regulated, strongly averse to risk-taking, for the most part very conservative, and which has long experienced environmental compliance as simply a matter of unit-by-unit command-and-control. Market-based compliance is not only new for utilities - it constitutes an entirely new culture and thought process. The new market creates risks that did not exist before, and it should not be surprising that the electric utility industry, with some notable exceptions, has been rather tepid in its early response to market-driven environmental regulation. The obvious risk, of course, is that being out of compliance with the CAAA would expose them to both criminal and civil liability. That potential reinforces the industry's instinctive conservatism in approaching compliance measures. If the market turns out to be less than liquid, a utility relying on it for compliance may find itself in some difficulty. The problem, of course, is the ever-present danger that perception may become a self-fulfilling prophecy - if it is feared that the market will be non-liquid and companies act accordingly, it may, indeed, *become* non-liquid.

It should be noted Congress itself anticipated some slowness in the market taking off. That is precisely the reason why the auction process, now being handled by the Chicago Board of Trade, was established. That mechanism not only kick-starts the market through a level of mandated trading, but also provides very real price information to all active and potential participants. This information is critical because neither the FERC nor the EPA has required the kind of public disclosure of market data the state regulatory community called for.

Although there is every reason to believe that the market will function as intended, there have been several constraints laid on the allowance trading system which may have contributed to delaying or distorting the development of the allowance market. Some state legislatures, administrative agencies, and interest groups are tinkering with the allowance market in different ways. Illinois, for example, passed legislation mandating the use of scrubbers. The Ohio legislature created incentives to encourage, although not mandate, the use of scrubbers. New York is considering a ban or strong disincentives for its utilities to engage in trades, or at least, certain types of trades. For some environmentalists, all trading is contrary to their view of public policy. While maneuvering for parochial benefit is to be anticipated as inevitable to some degree, it should be noted that there are aspects of the CAAA themselves that have, perhaps inadvertently, encouraged tinkering and stimulated parochialism. The rejection of the Byrd amendment providing compensation and retraining for miners who lost their jobs as a result of the CAAA, for instance, has caused policymakers in high-sulfur coal producing states to place a high value on the externalities of employment impacts in coal mining communities. Similarly, Congress' decision to create a seamless national marketplace for trading, rather than segmenting the market according to severity of impacts, has led to concerns, heard most often in New York, about adverse local effects of trading. Environmental groups and environmental regulators in some states have expressed concern about localized environmental effects of allowance trading, and have suggested legislation or rulemaking forbidding the sale of allowances to "upwind" sources,

the effect of which would be to remove the state from the allowance market. Doing so would of course discourage a local utility from overcomplying, and therefore may actually end up polluting the air in the area in question more than it might have been in the absence of such a maneuver. The CAAA themselves, however, compound the situation by not distributing allowances solely on the basis of the compliance burden on each utility. Clearly, if Congress' sole concern had been the liquidity of the allowance market, that would have been the appropriate action to have taken. Bonus allowances which were given out for reasons other than compliance impact have created a situation where "clean" states have windfall allowances to sell, something many environmentalists in these states urge them not to do out of fear that emission reductions already achieved will be lost. The important observation here is that considerable attention has been given to parochial issues, not only at the state, but also at the federal level, and this has had a definite impact on the development of the market. While there has been criticism of such parochialism, two facts remain: The CAAA themselves provide incentives for it; and PUCs, as agencies of the state government, cannot be expected to be blind to public opinion within their own jurisdictions. It should be clearly noted, however, that while the parochialism discussed may affect the market on the margin, it does not constitute a threat to the overall viability of the market. The impact of these distortions, if at all consequential, is more profound locally than nationally. Also, because these issues are on the margin, they are probably somewhat distorted by the embryonic nature of the market, and over time should become less significant as barriers to liquidity.

More important in its impact has been the failure of the FERC to play its important role. More than a quarter of all the initially allocated allowances were given to multi-state registered holding companies. The regulatory jurisdiction over transactions involving these allowances is anything but clear. PUHCA and the *Grand Gulf* decision would seem to indicate that the FERC has jurisdiction - however, the language in the CAAA states that PUHCA does not apply to allowance trading. While some states served by registered holding companies have discussed different scenarios for dealing with multi-state allowance allocation, there have been no formal agreements to date, and perhaps such agreements can never occur without FERC approval. The FERC, despite repeated urging by state regulators, has chosen to simply ignore this issue, as well as the related issue of how to allocate allowances between retail and wholesale customers - the two combined could represent more than a third of all allowances. That uncertainty constitutes a significant dampener on market development in those states. The optimal way to handle this problem is through the use of some kind of joint effort by the FERC and the states in question - an approach the FERC has consistently rejected in the past. Even on a go-it-alone basis, however, FERC has dropped the ball and thereby greatly enhanced regulatory uncertainty.

The allowance market creates a tangled series of tax issues, all of which will affect the decisions that utilities make about how and when, and perhaps even *if*, utilities will participate in the market. The IRS has issued some decisions about allowance sales and purchases, but many issues remain unclear. Moreover, the IRS decision to tax the entire gain from the sale of an initially allocated allowance will clearly serve to discourage the

early sale of these allowances. It is unfortunate that the IRS has chosen to view the initial sale of such allowances more from a revenue enhancement perspective than from the perspective of what reasonably might be needed to stimulate the market.

As noted, the EPA has issued its rules on trading. Its Acid Rain Advisory Committee (ARAC), of which I was a member, constituted an exemplary approach to rulemaking. In contrast to the usual sterile process of publishing a notice of proposed rulemaking in the Federal Register, the EPA convened a much more open, informal, and educational process and extended itself to get people to participate. Individual ARAC member's views didn't always prevail in the process, but the give and take of the process provided ample opportunity for consensus and convergence of opinion. Everyone was more comfortable with the rulemaking as a result. The EPA should be commended for following through on an innovative process and taking the whole thing seriously. While the process worked well, the changes with regard to substitution of units and the slowness developing an allowance tracking system have detracted from market liquidity.

The state commissions have responded to the many issues raised by creation of the allowance trading system in several ways. Before the CAAA were passed, a few state commissioners said they thought it might be good for their states to hoard allowances, because the uncertainty surrounding the development of the market could retard economic development. Other state regulators endorsed emissions trading early on. Since then, however, state commissions in general and NARUC specifically have encouraged policies which contribute to the development of a robust and liquid market. The Ohio and Pennsylvania commissions have adopted guidelines for utilities which lay out the evaluation process by which the prudence of allowance market behavior will be judged. NARUC has passed a resolution stating that it believes a liquid market to be in the public interest and urging the pursuit of policies which encourage development of an open allowance market. It has also, through the Keystone Center, convened a series of meetings involving all of the relevant constituent groups, on developing regulatory guidelines for dealing with issues involving allowance transactions, and endorsed the initial output of that effort.

The allowance trading program represents a real challenge to state commissions, because it demands that the traditional line between utility management and regulatory decisionmaking be reexamined. While some utilities have begun to involve themselves in emissions trading, in the face of such a new approach to environmental compliance, many utilities, particularly those largely unaffected in Phase I, have not taken the initiative in entering the market, but instead have waited for signals from their commissions as to how to proceed. Commissions, more accustomed to the judicial model of passive decisionmaking, have only sometimes sent signals and most have not.

The approach suggested by the Keystone Project is that commissions establish clear guidelines about regulatory treatment in order to signal their expectations about utility involvement in the allowance market. It is critical that commissions do so, and there are a number of ways in which it can be done. One very significant signal is the treatment of

cost recovery. There are two basic ways that a utility recovers its costs - through the base rates, in which a utility earns a return on its capital investment, and through the fuel adjustment mechanism, which generally functions as a simple pass-through. The choice of mechanism constitutes a powerful signal to the utility. If allowed to recover costs through the base rates, a utility may be more inclined to sit on allowances, because shareholders are earning a return on retained allowances. If allowance costs are recovered through the fuel adjustment clause mechanism, a utility has a greater incentive to play the market, because a shelved allowance represents capital that is tied up without any return being earned. Thus, if a commission wishes to signal a pro-liquidity bias it will, state law permitting, allow recovery through the fuel clause rather than base rates. Additionally, fuel clauses generally afford more frequent opportunity for regulatory review, thereby stimulating greater attentiveness to the market. That is precisely what the Ohio commission did.

Pre-approving compliance strategies provides another mechanism for directly informing utilities of the commission's preferences. The pros and cons of pre-approval of trading strategies are still being debated. Some argue that it will make utilities less risk-averse, while others say that it will impose unwanted rigidities in the system - forcing a utility in the worst-case scenario to have every trade pre-approved would be slow and impede if not preclude effective participation in the market.

A key purpose commissions serve is to decide whether a utility's actions were prudent or not. How commissions evaluate the prudence of a utility's performance in allowance trading offers another opportunity for regulators to let their preferences be known. A commission desiring to provide balanced signals to a utility will establish procedures and broad guidelines for not only evaluating the prudence of that utility's actions in the market, but its inactions as well. To do so, commissions will have to track the market themselves, and they will have to make it explicit that utilities will be fully evaluated on their posture in the market, whether they trade or not, utilities will have to be prepared to justify activity or inactivity, either way. Although this may seem burdensome, it is absolutely necessary - otherwise, it creates a bias for risk-averse utilities to avoid participating. From a regulatory point of view, sleeping through a favorable market should be every bit as risky for a utility as reckless speculation.

Creating the right incentives is another way for commissions to signal utilities. A low-risk course for the utility does not necessarily produce least cost for the ratepayer. Incentives can address this tension. The Southern Indiana Gas and Electric (SIGE) decision is an example of such an incentive. It established a benchmark below which the utility assumes all risks and above which the utility gets to keep all gains. The prototype may well be a model for creating an equitable distribution of risks and profits between ratepayers and shareholders. What is necessary in incentives is the appropriate symmetry between risk and reward. Socializing risks while privatizing gains and *vice versa* skews the incentives in ways that optimize the opportunity for gaming rather than efficiency.

One signal that Congress sent to utilities and regulators through the use of bonus allowances was that conservation should be a means of compliance. The concept is excellent, but the number of bonus allowances is too small to be a major incentive. Nonetheless, a number of states have used the CAAA as still another reason to promote demand-side management.

This list is not meant to be an exhaustive one, but merely to highlight the variety and complexity of the policy issues faced by state commissions and federal agencies in implementing the CAAA.

It is important to note that the CAAA of 1990 should be the last "dump on the utilities" approach to environmental regulation that we see. As monopolies, electric utilities were the type of deep pockets for which social and environmental gains could be gleaned - competitive industries were always less of a target for these bills, because they were much less able to pass through the costs to the consumer. Competition is coming very rapidly to the electricity industry, and it will no longer make sense to have laws that target only them for compliance expenditures. Some of the highest SO₂ emissions in the U.S. come from large industrial firms, not utilities, and they are not required to clean up SO₂ emissions under the CAAA. There can no longer be any justification for such approaches.

The success of the emissions allowance trading market has ramifications beyond the reduction of SO₂ emissions. For an industry and regulatory structure that is rapidly becoming competitive, this can be a valuable lesson in how to interact in a market-driven situation, and it can provide the beginning of a much-needed transition to a new model for future legislation and regulation. Certainly the model can be employed wherever there is an effort to control aggregate pollution rather than specific sources. CO₂ controls would lend themselves well to the market model, for example.

Thank you for the opportunity to testify before this committee. Discussion of these issues is very much needed right now, and thoughtful decisions from all relevant public agencies are vital.

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